

GDWorld

GENERAL DYNAMICS — A STRONG COMPANY FOR A STRONG COUNTRY

VOLUME 22 NUMBER 1 APRIL 1992

General Dynamics Well-Positioned For 1992

General Dynamics made major strides toward strengthening the company and its leadership positions in the defense industry in 1991.

Earnings were restored and profitable new business was won, increasing backlog by 15%. Productivity grew 14%; profit margins in continuing operations increased through the year. Financial strength and flexibility were restored with \$820 million in cash and marketable securities generated by year end. The financial market's recognition of this performance was equally dramatic. Share price more than doubled in 1991 adding \$1.2 billion to total shareholder value since the beginning of the last year. In essence, a foundation was laid to prepare the company to better serve its investors, customers, and employees in 1992 and beyond.

Chairman and Chief Executive Officer Bill Anders took note of these substantial improvements in the company's performance and financial strength at a strategy meeting of the company's key managers in late March:

"We're well on our way to creating the kind of internal efficiencies and effectiveness that are mandatory in the segments of the defense marketplace our businesses serve. While we continue that process in 1992, the increasing challenge facing us is to participate with equal effectiveness in the rationalization of our nation's defense industrial base so that

each of our core businesses can remain or become the premier supplier in its segment."

Anders directly refuted several industry observers who have misinterpreted the company's announced intention to return excess value to shareholders as an intention to shut down its businesses and "liquidate." "We have been doing exactly what we have said we would do — increasing our focus on strengthening core defense businesses, maintaining technical excellence, improving productivity and rebuilding our financial position, all with a view toward making our businesses stronger in the face of an increasingly challenging industry environment," he said.

recognized that the case for building the second and third Seawolf submarines is compelling in terms of preserving this nation's premier submarine design and manufacturing capabilities, extending our military capability into the future, and maintaining cost effectiveness."

General Dynamics' 1991 *Shareholder Report* underscores the company's approach to rationalizing key defense capabilities. Anders said, "It points out that there can be no question that our tactical military aircraft, submarine, and tank operations are leaders in their fields. They can prosper under virtually any reasonable attempt by government to create the kind of smaller but still viable

"We're well on our way to creating the kind of internal efficiencies and effectiveness that are mandatory in the segments of the defense marketplace our businesses serve."

Pointing to accelerated reductions in defense funding due to the collapse of the Soviet Union, Anders said, "There is no question that our nation must have a smaller, stronger, more focused defense industrial base. As the nation works to accomplish that objective, we firmly believe that the current debate on future defense budgets must recognize the importance of maintaining leadership in manufacturing critical weapons systems."

Citing the company's Electric Boat Division as a prime example of the importance of maintaining at least minimal development and production capabilities for key weapons systems, Anders said, "It is being increasingly

defense industrial base necessary to maintain military superiority."

With regard to other areas of its business, Anders said, "Our management is actively exploring options to provide them staying power similar to that of our major platform businesses, possibly through sales, acquisitions, mergers, or other arrangements."

As stated on the cover of the *Shareholder Report*, Anders indicates that "A stronger, more focused General Dynamics will emerge from the rationalization of this nation's defense industry. Each of our core businesses will be structured to better perform for our customers, our shareholders, and our employees." □

BUSINESS PERSPECTIVE

Working Smarter Is Working

Jim Mellor stepped into the role of president and chief operating officer of General Dynamics on January 1, 1991.

In discussing his views of the company recently, Mellor said he and Bill Anders are committed to General Dynamics becoming no less than the number one or number two competitor in all of its core businesses and to establishing the critical mass necessary to sustain a competitive advantage in each. In this way General Dynamics will have created a "win-win-win" situation for every one of the company's "equally important" constituencies: shareholders, customers, and employees.

He emphasized that what the corporation is doing today — "rightsizing" for efficiency, "restructuring" for financial enhancement, and "repositioning" to focus on core competencies — will determine how well it will be able to compete near-term and long-term for declining U.S. defense dollars and international sales.

Mellor is firmly convinced that General Dynamics will be around in the future when the "shakeout" of the industry is finally complete and that the company, though smaller, will be an even stronger and more viable competitor than it is today.

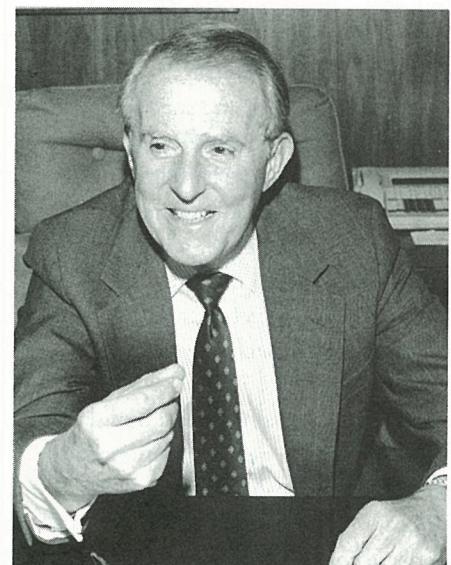
Fortunately, the company has been well ahead of the power curve in foreseeing the dramatic changes occurring today and has strategies firmly in place to ensure our future competitiveness.

Q Employees made great strides in 1991 toward greater efficiency and productivity. But is "working smarter" really working?

A Yes, it really is. Employee dedication to greater efficiency and productivity is producing very positive results. Productivity measured in terms of sales per employee is rising. The working capital needed to run our operations, measured against percentage of sales, is headed in the right direction — downward. And the higher profit margins we're achieving in our \$26 billion backlog tell me we're definitely on the right track.

What all of this means to our people is that we will become more competitive in the future, ensuring viability even in a declining marketplace.
Continued on page 3

*Jim Mellor
President and Chief Operating Officer*



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WASHINGTON WATCH

Legislative Staff in Dialogue with Lawmakers

"It's not over until the fat lady sings," said Dick Motta, coach of the Washington Bullets in 1979 when that team won its only NBA championship, equating the hefty soprano of opera lore to the buzzer at the end of the game.

That's good advice for General Dynamics employees and shareholders in viewing this year's proposed defense cuts. While at first glance the outlook seems bleak, the company's government relations staff says not to despair — the legislative process provides many opportunities to work with congressional leaders in resolving some very complex issues.

"I'm not going to say things aren't tough. This is probably the toughest year ever, and it will take a maximum team effort," says Bill Maurer, staff vice president for congressional relations, who is helping present General Dynamics' concerns on national security and the defense industrial base to lawmakers.

Alan Chase, senior vice president for government relations, and his staff have ongoing dialogue with key government officials and legislators aimed at restoring the two Seawolf submarines recommended for cancellation by the administration and keeping production lines warm throughout the corporation. In fact, on April 10 the House Defense Appropriations Subcommittee removed SSN-22 from DOD's rescission list, and an article in The Wall Street Journal reported that budget pressures could lead the Air Force to shelve a new, multirole fighter and instead rely on upgraded F-16s as the backbone of the service's fighter force into the 21st century. However, the Air Force emphasizes that it is keeping its options open.

Chase says "we're approaching the Seawolf" and other issues at "warp speed," and he sees encouraging signs in Congress as lawmakers wrestle with complex issues to achieve the best results for the nation. "We share Congressman (Les) Aspin's views on preserving essential elements of the industrial base, and that could bode well for the F-16 and M1 programs. Support is also continuing to grow to reverse the proposed cancellation of the second and third Seawolfs," Chase says.

Divisional representatives, in close coordination with Chase's staff, have explained how program cuts, if sustained, will damage the skilled labor base as well as erode the nation's defense industrial base. Since February of this year, Roger Tetrault, corporate vice president and general manager of Electric Boat, testified before three separate congressional committees and warned of the implications of cutting too deeply into the nation's submarine building program.

"If there is one main reason why General Dynamics has strength on Capitol Hill, it is the excellence of our products and the excellence of the people who build them."

"The administration and the DOD represent one-half of the total story on where dollars will be spent," says Myra McKittrick, corporate director of special projects. The other half is Congress, and if there is one main reason why General Dynamics has "strength on Capitol Hill," Maurer adds, "it is the excellence of our products and the excellence of the people who build them."

The process of change has begun — committee markups, floor debate, and conference committee deliberations. When Congress finally passes the defense authorization and appropriation measures, they will be sent to President Bush for signature.

"We're working with the administration and elected government officials every step of the way," Maurer says. "It's a long, difficult process and we've got many bridges to cross before it's over." But, Maurer says, General Dynamics' divisions are represented by strong and supportive congressional delegations.

"The Connecticut/Rhode Island delegation is totally unified and working very hard to maintain the Seawolf program," he says. "The Michigan, Ohio, and Pennsylvania delegations have shown their support to the M1 program over the years, and the Texas delegation worked hard last year for continuation of the F-16 program and is doing so again this year."

McKittrick forecasts that, in addition to the impact on national security, the impact of the economy will affect the president's ultimate budget. "I think the president is getting a lot of pressure out on the road about the cuts. He's being asked: 'Why are you giving back to the Treasury \$7 billion worth of jobs?'"

Chase agrees and says, "There is a greater realization in some quarters of Congress that the decline of employment in the defense industry and the phasing out of members of the armed services could contribute to a deeper recession, or at least a slowing down of the recovery from a recession."

But Chase's message is upbeat: "The budget outlook may appear chaotic, but change presents opportunities as well." For example, various reports from Congress and the Pentagon on the U.S. defense industrial base and related topics will influence congressional debate in the months ahead. In one hearing on the submarine base in early April, Adm. Bruce DeMars argued that Electric Boat and the Seawolf are essential to maintaining nuclear-powered submarine design and construction skills. Gen. John Loh, testifying before the Senate Armed Services Committee on March 13, stated that it is important for the Multirole Fighter program that the F-16 production line remains open. □

DEFENSE INDUSTRIAL BASE

GD's Business Approach Cited

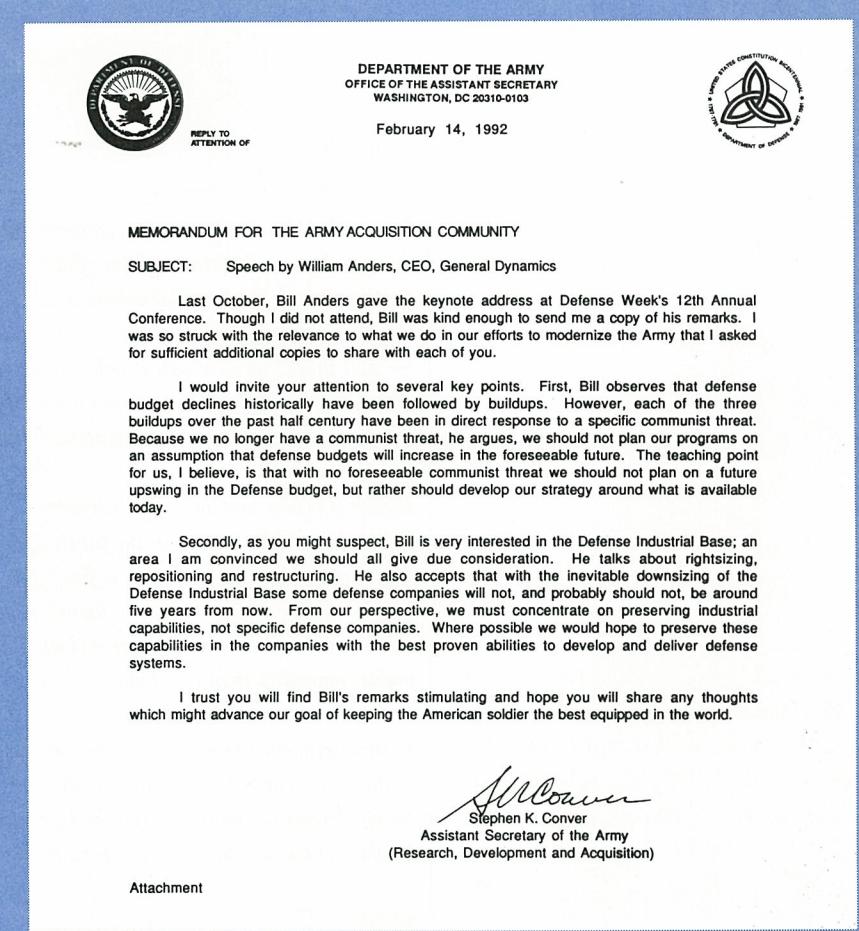
In his keynote address on "Rationalizing America's Defense Industry," delivered on October 30, 1991, Chairman and CEO Bill Anders described General Dynamics' current strategy for survival and success — even during the down defense budget years that lie ahead. The company's renewed emphasis on winning shareholder confidence, which fuels the investment needed to sustain a healthy business cycle, was a key element of the speech.

Anders' remarks on defense budget declines and the need to "rationalize" the defense industrial base — reduce capacity to accommodate a reduced demand for products — caught the attention of key DOD procurement officials, including Stephen K. Conver,

the assistant secretary of the Army (Research, Development and Acquisition). Conver recently provided Anders' speech to all members of the Army acquisition community as must reading. Likewise, it is now required reading at the National Defense University's Industrial College of the Armed Forces in Washington, D.C.

The speech was covered by some of the nation's leading newspapers where it was described in terms of an industry benchmark. The Dallas Morning News reported Anders' remarks as a "corporate revolution," and the Wall Street Journal commented that the address was "sure to stir Wall Street, where some have embraced Mr. Anders as a visionary..." According to USA Today, "analysts and investors have applauded" the strategic turnaround.

For copies of the speech, call Corporate Communications at 703-876-3189.





Asked if the company had changed its thinking on commercial diversification, Mellor said:

"No. The reality is that the key factors that have made General Dynamics a potent force in defense and aerospace do not readily translate to success in the commercial arena. Therefore, we intend to stick to our knitting and focus on the business we understand, where we do well, and where we have a proven track record and a highly trained and skilled workforce."

Working Smarter

continued from page 1

Q Do you see these performance trends continuing in 1992?

A Emphatically yes! And this is absolutely essential if we are to remain competitive in a shrinking market. However, we are just getting started. The key efficiency indicators I just mentioned — sales per employee, working capital as a percentage of sales, and margin in backlog amongst others — will continue to receive significant attention in 1992 because they go right to the bottom line: competitiveness and profitability.

In this regard, employees did an excellent job in 1991 improving individual productivity and tightening financial procedures, such as receivables management and customer withholdings. But the enduring gains in efficiency and productivity we want to achieve in 1992 will result from quantum improvements in "process" management — the way we go about getting the job done. Can we, for example, reduce manufacturing span times, improve inventory turns, align our physical inventory levels more closely with actual requirements, actually take processes out, and create the databases that will enable broader implementation of manufacturing resource planning? I believe the answer again is yes we can. And we intend to do it!

We also need to continue to ask ourselves if we can get certain things done more efficiently by "outsourcing," or are we our own best suppliers? When it makes financial sense to take the work out-of-house, we'll do it, as we did when we sold Data Systems Division to Computer Sciences Corporation. I believe this not only reduced our information systems costs but also created career opportunities for affected employees that they previously did not have with General Dynamics. Everybody won in that deal.

Q What are our near-term priorities to address President Bush's proposed defense cuts and to the possibility of deeper cuts to come from Congress?

A We need to continue the momentum we began building last year to achieve the operating efficiencies that will enhance our competitiveness in this new era of reduced defense spending.

General Dynamics, I believe, has led the industry in responding to the new realities of the defense marketplace. We took great pains beginning in late 1990 to get ahead of the power curve. We started a program of rightsizing, reducing, and focusing discretionary investment dollars, reducing working capital, and improving productivity in anticipation of a dramatic budget downturn.

As we predicted and began planning for back then, future defense sales are going to decline and production rates will be lower. And importantly, this defense budget reduction differs from those in the past. Previously, defense declines have always been followed by a build-up. This time, to my mind, we will eventually reach a plateau and stay there for a number of years until world conditions dictate a policy change.

With fewer defense dollars, our government customers will demand the best value at the lowest cost. The winners in this new competitive race will be the low-cost/low-rate producers. Given a baseline of capabilities and performance, DOD customers will be far more focused on the cost of our products than they have been in the past.

Although we are not pleased with the administration's proposed cuts to some of our programs, we had anticipated some reductions would occur and were conservative in our planning baselines. As the debate continues in Congress, I think it is possible that further cuts will be proposed. The House of Representatives, for example, has set the FY '93 defense budget top-line at approximately \$7.5 billion less than President Bush requested while the Senate has stayed with the President's recommendation.

Nevertheless, to solidify the importance of General Dynamics' products to future national security needs, we are recommending that the administration, Congress, and DOD carefully evaluate all program cuts and reconsider and reinstate programs critical to keeping a healthy defense industrial base that is able to respond vigorously and effectively to future national and international security needs.

Q What is the corporation's position on the new acquisition policy of more R&D and reduced production work?

A General Dynamics takes great pride in manufacturing products of the highest quality using the most innovative technology. DOD's new

policy of performing research only to "put it on the shelf," therefore, has some real shortcomings and is not the best thing for the defense industrial base. History has shown that as many problems, or more, can surface during the early production phases as in the development process. At the minimum, a limited low-rate production run is absolutely essential.

Even before this recent turn of events, however, our forecast of the "new realities" drove us to begin taking steps to "lean out" our production processes and structure our facilities to adjust to lower production rates. Learning how to operate efficiently at significantly lower production rates will require not just "improvements at the margin" but quantum-type improvements as well necessitating restructuring and doing things differently in some cases. Bill Anders and I were pleased to see that the subject of low production rates, which we discussed with House Armed Services Chairman Les Aspin in October 1991, was incorporated into Aspin's recent four-point approach to defense acquisition and production.

Q What is your vision of the future defense needs of our nation and the role the corporation will play?

A Although the Berlin Wall is down and the Russian Bear is in hibernation, now is certainly not the time for our country to let its defenses down. The single, powerful threat of the Soviet Union in the past was easy to articulate and easy for Congress to define and, consequently, to support the weapons requirements needed to defeat the threat. I find the global political situation we are in today is even more complex and potentially more ominous than during the Cold War era. Events are continually evolving and it is extremely difficult to know what the threat is today and might be in the future.

What does appear certain to me is that defense spending declines are real and lasting. Getting rid of overcapacity in the industry — the "rationalization" of the industry as Bill Anders describes it — is the direction Congress and the Pentagon are headed. But if General Dynamics focuses on what we do best and we continue to improve our efficiency and productivity, we will not only have a future but also one where we will play an even more important role than we have in the past. The individual contributions of every employee are critical to this end. □

SAVINGS AND STOCK INVESTMENT PLAN

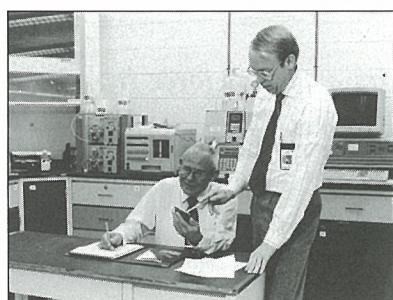
New Data Added

The General Dynamics common stock rate of return has been added to the SSIP chart. It has two components: stock growth and dividends.

The average monthly stock purchase price for the SSIP is included as well. It is the result of a number of stock purchases made during the month by the plan's trustee. Because the price varies with each purchase, an average price is determined from all the purchases made during the month. Your monthly contributions and the company match are divided by the average cost to arrive at the number of shares credited to your account for the month.

Annual Rate of Return for 12 Months Ending March 1992

	1990	1991	1992
SALARIED			
Government bonds	8.5%	11.0%	9.0%
Diversified portfolio	18.9%	12.6%	13.3%
Fixed income	10.2%	10.0%	10.2%
General Dynamics Stock	-29.0%	-8.0%	96.3%
HOURLY			
Government bonds	8.6%	10.9%	8.7%
Diversified portfolio	19.3%	12.7%	12.9%
Fixed income	10.2%	9.8%	9.9%
General Dynamics Stock	-29.0%	-8.0%	96.3%
GD stock closing price:	\$37.500	\$33.500	\$64.750
Average purchase price:	\$37.584	\$32.412	\$63.515
Stock growth:	-30.9%	-10.7%	93.3%
Dividends	1.8%	2.7%	3.0%



CFC-free Solvent

Co-inventors of FMS-2004, a CFC-free metal cleaning solvent, Fort Worth Division's Henry Weltman (l), Engineering Specialist SR., Materials & Processes Laboratory, and Tony Phillips (r), Engineering Specialist, Systems Materials & Processes Group, discuss test results.

See "Zero Discharge" below.



Lovelace Honored

Dr. Alan Lovelace has been selected the 1992 recipient of the George M. Low Space Transportation Award. He has been praised for his "bold technical approaches and rapid development programs" and for his commitment to developing technology that meets international requirements. Lovelace, who is senior corporate vice president and chairman of Commercial Launch Services, Inc., a wholly-owned subsidiary of General Dynamics, was appointed to Vice President Quayle's Space Advisory Board in January.

NEWS DIGEST

First Quarter Results

General Dynamics reported 1992 first quarter earnings from continuing operations of \$72 million, or \$1.71 per share, an increase of 44% versus the \$50 million, or \$1.20 per share reported in the year-ago period. Total net earnings, the combination of earnings from continuing operations and earnings from discontinued operations (including a \$358 million gain from the sale of Cessna), were \$435 million, or \$10.32 per share, versus \$57 million, or \$1.37 per share, last year.

The backlog of funded orders at the end of the quarter stood at \$17.5 billion, and total backlog (funded and unfunded) increased to \$26 billion compared with \$187 billion and \$21.7 billion, respectively, last year.

Underwater Telemetry

Applied Remote Technology, a General Dynamics subsidiary based in San Diego, has delivered a second-generation underwater telemetry device to the Defense Advanced Research Projects Agency. Called The Adjustable Diversity

Acoustic Telemetry System II, the device demonstrated a range of 2,000 yards between a submerged autonomous underwater vehicle and a surface platform. The range and data are significantly better than the first model of the device.

Atlas Launches

On February 10, the first Atlas II for the USAF successfully boosted a Defense Satellite Communications Systems payload into orbit from Cape Canaveral. This followed the successful first flight of an Atlas II on December 7, 1991, carrying a EUTELSAT satellite. A commercial Atlas I boosted the Galaxy V communications satellite into orbit on March 13.

Also in March, Commercial Launch Services (CLS) announced three launches from international customers added to its commercial manifest. INTELSAT authorized go-ahead for an Atlas IIAS to launch an INTELSAT satellite and the Inmarsat Council selected the Atlas II for the launch of two Inmarsat-3 satellites. At the same time, CLS announced an 8% performance growth for its Atlas family of

launch vehicles. The performance growth increase in payload lift capability responds to customer requirements for launch of larger, more capable spacecraft planned for this decade.

Reduced Debt

General Dynamics called two debt issues — 7 7/8% notes due 1993 and 9% debentures due 2016. The redemption date for both issues was March 5, 1992. These actions reduced the corporation's long-term debt by approximately \$350 million in the first quarter of 1992. Further action to reduce indebtedness by an additional \$100 million is expected to be taken later this year.

Turkey Buys F-16s

Representatives of the government of Turkey and the U.S. Department of Defense signed a Letter of Offer and Acceptance on March 26 for Turkey's second F-16 order. The agreement calls for the procurement of 40 F-16s and, pending financial arrangements, also covers long-lead procurement of material and components for a second 40 aircraft.

Thailand Order

Pentagon and Thailand governmental representatives signed a Letter of Offer and Acceptance on December 30, 1991, for Thailand's order of 18 F-16s. The order is a follow-on to Thailand's previous orders of 12 and six aircraft, which were delivered in 1988 and 1991, respectively.

M1A2 Assembly

Land Systems has completed assembly of two of five pilot production M1A2 main battle tanks. The M1A2 is the successor to the M1A1 with low-rate initial production scheduled to begin in fall 1992 for fielding in spring 1993.

Seawolf Award Upheld

On March 17, a federal appeals court upheld award of the second Seawolf submarine contract to Electric Boat. The contract had been challenged by Newport News Shipbuilding. Electric Boat said the decision "dramatically validates our contention that the Navy's competitive award of the SSN-22 was completely proper and in the best interest of the nation's taxpayers."

Call General Dynamics Corporate Communications for more information, 703-876-3185.

ENVIRONMENT

GD Makes Headway on Zero Discharge

General Dynamics has significantly reduced the use of chemicals that might break down the earth's protective ozone layer, in line with the company's "zero-discharge" goal established in 1984 for all hazardous materials.

Since 1989, General Dynamics has decreased its use of potential ozone-depleting chemicals by 34% and beginning in 1984 through December 1991, has reduced its total hazardous waste discharge by 44.6 million pounds, or 79%.

Military specifications and standards require use of certain cleaning solvents for metal and electronic components that typically contain trichloroethane and chlorofluorocarbons (CFCs). Although CFCs and trichloroethane are safe for workers, they are suspected of depleting the ozone, the atmospheric protective band that blocks out most of the potentially harmful ultraviolet rays from the sun.

"We have been phasing out use of these products since 1987 when recognition of possible ozone layer depletion

became widespread," said Robert Hill, corporate director of environmental resource management.

According to the Environmental Protection Agency, the defense and aerospace industry is responsible for only 12% of harmful emissions resulting from the use of these chemicals. Regardless, General Dynamics is committed to reducing their use.

Emissions of potential ozone-depleting chemicals have dropped from 2.2 million pounds in 1989 to 1.5 million pounds in 1991. At the two divisions where CFC use is greatest, Fort Worth (FW) expects to eliminate all but trace CFC emissions by year-end 1992, and Air Defense Systems, which has reduced emissions by nearly 50% since 1989, is continuing its reduction efforts.

CFC Phase Out

The actual rate of ozone depletion and the dangers that might result are continually debated by scientists. Nevertheless, General Dynamics' Hill says, "We are going to err on the side of caution. We follow the press reports and the literature, but we set our policies to follow the law, sound environmental practice, and common sense." General Dynamics is currently reviewing the new CFC phase-out rules announced by President Bush on February 11, 1992.

Despite the complexity of the problem, General Dynamics' divisions are achieving reductions in the use of possible ozone-depleting chemicals.

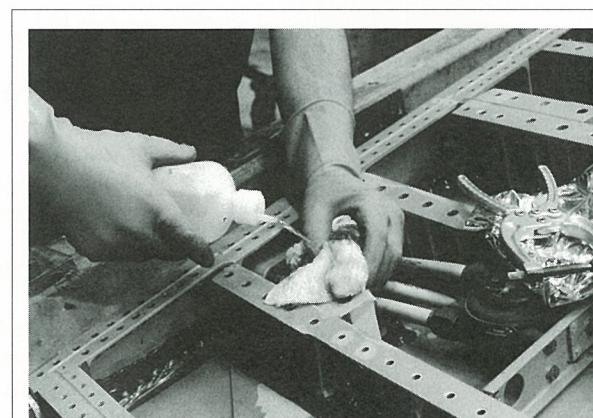
■ Even though production was up markedly in areas where solvents are used, Convair and Space Systems achieved one-year reductions of 47.3% and 44% respectively.

■ Electric Boat scored a 72.1% one-year reduction while production remained constant in 1991.

■ In 1990, FW invented FMS-2004, a CFC-free metal cleaning solvent the USAF approved for use in February. When approved by the state of Texas, emissions at the division will drop to nearly zero, thereby cutting CFC-based solvent use corporate-wide by nearly one-third by the end of 1992.

■ Air Defense Systems' (ADS) CFC-related usage decreased from 760,000 pounds in 1989 to 532,000 pounds for a 30% drop in 1990. A further decrease to 392,000 pounds, a 27% reduction, was accomplished in 1991. ADS uses the solvents for electronics component cleaning, which is required following flux soldering. The division is also investigating a new, non-CFC solvent that Hughes Aircraft plans to license pending Pentagon approval.

■ Along with using substitute chemicals, General Dynamics engineers have reduced harmful emissions at all divisions through procedures for housekeeping and the handling of used rags, containment for degreasers, recycling of solvents, and changes to manufacturing processes.



A worker demonstrates cleaning with FMS-2004 in a test program in the wing assembly area of the Fort Worth F-16 factory. The wing assembly has several operations that involve use of the wipe solvent to remove excess sealant, fingerprints, grease, dust, and other contamination that interferes with the adhesion of adhesives, paints, and sealants.

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GENERAL DYNAMICS — A STRONG COMPANY FOR A STRONG DEFENSE

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WASHINGTON WATCH

Rescission Compromise Begins to Address Defense Industrial Base Issues

On June 4 President Bush signed a congressional compromise bill that responds to his proposed \$7.8 billion in funding rescissions for the FY 92 defense budget. By signing the bill into law, the president signaled that DoD would comply with the congressional version of the bill.

The compromise measure preserves funding of the SSN 22, the second ship in the Seawolf class, which was awarded to General Dynamics' Electric Boat Division in May 1991. Also retained is \$540 million which may, at the discretion of DoD, be applied either toward building a third Seawolf, continuing the SSN 688-class attack submarine program, or any other approach the U.S. Navy chooses to preserve the submarine industrial base. While funds were cancelled for the procurement of 60 of the next-generation M1A2 tanks — a new production in addition to the 62 M1A2 tanks provided in the FY 91 budget — \$225 million has been left intact for the upgrade of M1 tanks.

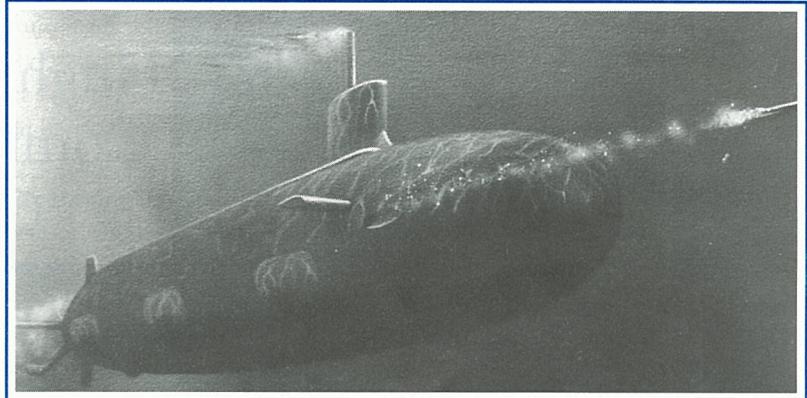
Lawmakers Respond to Concerns

In their dialogue with government officials, General Dynamics' top management and Washington Office legislative staff took a common sense approach in explaining industry's concerns for the preservation of the defense industrial base. For example, the potential loss of the nation's long-term investment in a highly trained and highly skilled work force and the immediate and long-term costs of terminating the second and third Seawolfs were extensively discussed. The questionable ability of the industry to retool in times of crisis and effectively mobilize the work force after a gap in production of several years was another topic of

great concern and debate. Encouraging careful consideration of industrial base issues at this time was a critical goal because the Budget Enforcement Act of 1990, which is effective only through FY 93, protects funds from being shifted into or out of three spending categories — defense, international, and domestic. Defense programs would be in greater jeopardy once the "fire walls" prohibiting shifting of funds come down in FY 94.

The concept of selective low-volume procurement, proposed by Congressman Les Aspin as a means for preserving essential elements of the defense industrial base, also found support and, in fact, was discussed last fall by General Dynamics CEO William A. Anders and President James R. Mellor in a session with Aspin before he had constructed his proposed policy. More recently on May 28, Anders told the Defense Symposium on Industrial Preeminence for National Security that DoD's new acquisition policy of increased emphasis on R&D to stretch scarce defense dollars is a credible "front-end" for a revamped spending strategy. However, he summarized, the "back-end" of the policy — reduced production and reliance on prototyping — would be dangerous if not accompanied by, at the very least, selected low-level production of key weapons systems.

Nuclear submarines and tanks provide good examples of weapons platforms with no commercial counterparts, and building additional Seawolfs, for



The compromise measure preserved funding of the SSN 22, the second ship in the Seawolf class (artist's concept).

example, would sustain vital shipbuilding skills plus bridge the gap between current production and the next-generation new attack submarine, not scheduled to begin production until 1998 at the earliest, Anders said. Without sustained production, whether it's nuclear submarines, tanks, or fighter aircraft, advances in manufacturing technology would not be adequately tested on real production lines and the manufacturing expertise and know-how that have been built up through the manufacturing of hundreds of billions of dollars of key weapons systems would be lost. When the time comes to restart high-rate production to build more weapons systems, the start-up costs would be enormous, he explained.

In concert with the months long debate over the president's proposed rescissions, DoD and the military services have been reassessing and prioritizing their future needs. General Dynamics' legislative staff reports that the U.S. Air Force may now be moving to preserve funding for 24 USAF F-16s in the 1993 defense budget and to obtain long-lead funding for 24 more aircraft in FY 94 and following years. ■

BUSINESS

Stock Buyback Set in Motion

On June 8 General Dynamics announced an offer to repurchase 13 million shares of common stock. The offer, which became effective on June 10, 1992, came shortly after Chairman and CEO William A. Anders told shareholders at their annual meeting in May:

"Given the shrinking defense marketplace, General Dynamics cannot effectively use all of the cash we are generating. We believe that the purported benefits of large-scale, military-to-commercial diversification are largely illusory, and such investment would be wasteful. We continue to believe the most effective and efficient way to apply our excess cash to the commercial economy is through its distribution back to our shareholders. We believe they should have the opportunity to make their own individual decisions regarding commercial diversification. This is in keeping with the American economic system which encourages the free flow of capital from one market area to another to most efficiently generate new products, increased employment, and improved return on investment."

Wall Street reacted immediately to the news of a stock buyback. On Friday, June 5, GD stock price closed at

\$65.38; on June 8, the day of the announcement, it surged 5 5/8 points to \$71 at the close of active trading. Jack Modzelewski, an aerospace analyst with PaineWebber Inc. in New York, said: "You have to remember that a year and a half ago, Wall Street figured the whole company wasn't worth a billion dollars. What a dramatic change." Echoing, in essence, General Dynamics' management strategy, Jerry Cantwell, Wertheim Schroder & Co., viewed the buyback as an indication that the company doesn't want to diversify into businesses it doesn't understand.

Shareholders Elect to Participate or Not

Both hourly and salaried employees who are members of the company's enhanced Savings and Stock Investment Plan (SSIP) have been mailed materials explaining in detail the terms and conditions of the offer and how to participate if they so choose. Amendments to the SSIP, ratified by shareholders in January 1992, allow members whose accounts hold shares of GD Common Stock to direct the plan's trustee — The Northern Trust Company — regarding the tender of shares through a self-tender offer.

The offer, proration period, and withdrawal rights expire at midnight on July 8, 1992, New York City time. However, to assure that the trustee has time to submit a tender for shares held in the savings plans, an

employee's instructions must be received by no later than 5 pm, New York City time, on Monday, July 6, 1992. If no direction is received, the trustee will not tender any of the employee's shares and they will remain in the individual's account in the company stock fund.

In brief, GD employee shareholders participating in the offer are required to use the Tender Instruction Form in the June mailing to specify their selling price, which is restricted to a range of \$65.375 to \$75 per share. The company will then determine the lowest price within that range to enable purchase of 13 million shares and will buy back from eligible participants all shares properly tendered at or below that figure. If more than 13 million shares are tendered, portions will be returned on a prorated basis.

Employees should call the SSIP Direct Information Access Line (DIAL) at 1-800-828-8100 (8186 for rotary dial phones) from 8 am to 8 pm Central Time, Monday through Friday, for questions and assistance. To learn the number of shares of company common stock credited to their account in the savings plan, employees should use DIAL's computerized voice response system (5 am to 12 midnight Central Time) for updated savings plan share balances. ■

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DEFENSE INDUSTRIAL BASE

Dave McPherson, vice president and general manager of General Dynamics Air Defense Systems Division, will be named by Hughes Aircraft to head the transition team in Hughes' planned acquisition of GD's missiles business. McPherson's team is expected to begin their duties as soon as government review and approval of the sale is completed. The team will focus on facilities, human resources, technologies, manufacturing, and employee communications.

General Dynamics' announcement of the pending sale of the company's missiles business to the Hughes Aircraft Subsidiary of General Motors Corporation for a guaranteed minimum of \$450 million came on May 11. The transaction takes the company one step further in its strategic plan to focus on core businesses. At the same time, it is a clear example of how rationalization within the defense industry can potentially create stronger, more cost-effective suppliers in the new era of reduced defense spending.

Hughes will inherit the strong technical and manufacturing competencies and solid reputation for design leadership that has characterized General Dynamics' missiles operations. By adding ground-based

Hughes, GD's Missiles Combination Creates "Critical Mass"

missiles, such as the company's Tomahawk cruise missile, to its repertoire of air-to-air missiles (including the advanced medium-range air-to-air missile, the Phoenix missile, and the Maverick missile), Hughes hopes to become a stronger competitor in the United States as a manufacturer of tactical missiles. The combined operations of the two companies will, in fact, make Hughes roughly the same size as market leader Raytheon.

The decision to sell the missiles business followed thorough analysis, which took into consideration anticipated declines in funding missile programs and the dual-sourcing procurement policies of the 1980s. Although seriously considered as a potential core business, the conclusion was that by itself, the missiles

business could not have achieved sufficient efficiencies and market position to be the leader in a field that included nearly a dozen firms in the United States alone. In addition, the company had found more interest in the purchase of the missiles operations among peers than in the sale of their own.

The transaction will be accomplished through the receipt by General Dynamics of approximately 21.5 million shares of GM Class H common stock. Under the terms of the agreement, the shares issued to General Dynamics are expected to be sold in a secondary public offering, with the timing and arrangement under GM's control. This will likely occur shortly after the transaction is closed, which is expected to take place by early fall. The precise organizational structure, including the location and functions of the specific production and engineering activities, has not been announced by Hughes.

Hughes will reacquire any shares not sold in a public offering. If the market value exceeds \$450 million at the time of sale or reacquisition, Hughes and General Dynamics will share the excess value. ■

Company to Focus on Four Core Platform Businesses

*A*t the May annual meeting of shareholders in Lima, Ohio, William A. Anders, General Dynamics chairman and CEO, announced the company's decision to focus on four businesses — Tactical Military Aircraft, Nuclear Submarines, Armored Vehicles, and Space Launch Systems. Each of these businesses, he emphasized, meets the criteria of market leadership and the potential to achieve critical mass.

Excerpts from Chairman Anders' remarks on the need to continue the "rationalization" of the industry follow:

"... The new realities of the defense marketplace continue to present this company with formidable challenges. Early last year, we concluded that the declines in defense spending were structural and permanent. At that time, many in our industry viewed our position as radical.

"Today, it's difficult to find anyone who has not reached the same conclusion. Projected defense budgets are dropping to annual levels of about \$275 billion, and DoD spending policies are in a state of flux. For example, current DoD proposals are placing a heavy emphasis on R&D, with little planned procurement. In our opinion, such a policy shift, if implemented, could seriously jeopardize

this nation's ability to field the next generation of advanced weapons systems.

"In addition, the debate over a perceived 'Peace Dividend' could render current DoD budget projections optimistically high. In fact, there are a number of proposals in Congress calling for annual defense budgets to fall below \$200 billion during this decade. Clearly, this is a sobering environment for our industry. But, the news is not uniformly bad.

"As the administration and the Congress wrestle with these tough choices, they are becoming increasingly aware that shortsighted decisions could inflict permanent damage on the nation's defense industrial base. Fortunately, there are signs that common sense might ultimately prevail.

"The debate has begun to focus on an important national security issue — the retention of this nation's capability not only to design but also to produce key next-generation weapons systems as they are needed. In addition, the regretful increase in international instability is generating legitimate needs among our friends and allies around the world for strengthening their own defense capabilities. The demonstrated superiority of U.S. weapons systems provides opportunities for our participation in this international marketplace. Therefore, future defense budgets, when augmented by foreign sales, could create a reasonably adequate marketplace for defense suppliers.

"However, for this to be possible, the U.S. defense industry must be sensibly rationalized. Rationalization means that our defense industrial base must be

reduced and become more efficient at the same time. Supply must be brought into balance with demand if our nation is to have an effective and efficient defense industry in the future. This is a difficult, but doable, challenge.

"During the 1980s our industry prepared to serve projected annual defense budgets of over \$500 billion — approximately two times the size of currently projected budgets. As a result, our industry has massive overcapacity. Not only are there more people in our industry than future markets can realistically support, there are too many facilities. There is too much investment. In fact, the industry has too many players. All of this must change.

"The administration has firmly rejected suggestions that the government adopt an 'industrial policy' to manage the contraction of the defense industrial base. There is much debate as to whether this is right or wrong. But, one fact is clear — it is the stated policy of the government. Therefore, since the government will not act, industry itself must take the lead. We must take the difficult actions necessary to match supply — the productive capacity of our industrial base — with demand — the research and procurement dollars which will be available in our domestic and international defense markets.

"We believe that effective rationalization of the defense industrial base will benefit all:

◆ Our armed forces will have

Continued on page 3.

"Officials in DoD and our armed forces have acknowledged in recent weeks that General Dynamics' leadership in rationalizing the defense industrial base is right on track with the new realities of the defense marketplace."

William A. Anders, June 1992

Atlas IIA Launch

Intelsat K, a \$102 million television relay satellite needed for the Summer Olympics, was lifted into orbit June 9 by a General Dynamics commercial Atlas IIA rocket. The \$60 million Atlas features the first use of upgraded Centaur second-stage engines.

Correction

Total funded backlog for 1991 was incorrect in the April 1992 *GD World*. The correct statement is: "The backlog of funded orders at the end of the quarter stood at \$17.5 billion, and total backlog (funded and unfunded) increased to \$26 billion compared with \$17 billion and \$21.7 billion, respectively, last year."

MAY 1992 SSIP RATE OF RETURN

SALARIED	1990	1991	1992	HOURLY	1990	1991	1992	GD Stock Closing Price	1990	1991	1992
Government Bonds	8.3%	10.7%	9.2%	Government Bonds	8.3%	10.5%	9.0%		35.500	38.375	64.625
Diversified Portfolio	15.8%	9.7%	12.0%	Diversified Portfolio	15.9%	9.6%	11.5%	Average Purchase Price	34.701	38.999	64.756
Fixed Income	10.2%	9.9%	10.3%	Fixed Income	10.2%	9.7%	10.1%	Stock Growth	-38.1%	8.1%	68.4%
General Dynamics Stock	-36.4%	10.9%	71.4%	General Dynamics Stock	-36.4%	10.9%	71.4%	Dividends	1.7%	2.8%	3.0%

General Dynamics dividends are included in the Rate of Return of General Dynamics Stock.

SAVINGS AND STOCK INVESTMENT PLAN

Stock Gains Add \$150 Million To SSIP

Over the last 18 months General Dynamics' business success and the resulting dramatic increase in the company's stock price have translated into significant financial gains for employees who participate in the enhanced Savings and Stock Investment Plan (SSIP).

Building Value

General Dynamics employees have worked hard to implement the company's

new business strategy and to make it a more profitable and effective competitor in the changing defense industry. The marketplace has recognized the dramatically improved performance and prospects of the company, and at this writing, June 11, 1992, the market price of General Dynamics stock is \$70.63 per share, a 111% increase from \$33.50 on March 31, 1991, the last day before the SSIP enhancements became effective. A 111% increase in the stock price represents a \$1.6 billion increase in total shareholder value. This impressive increase benefits all 40,000 employees who today own General Dynamics stock, adding \$150 million in value to the stock held in the SSIP at May 31, 1992.

In addition, earlier in the year the company announced a 60% increase in the quarterly dividend from 25 cents to 40 cents per share. Changes made to the SSIP ratified by shareholders in January 1992 also give employees more flexibility in choosing how they will invest their share of the stock buyback announced on June 8 should they decide to participate.

While these changes benefit all employee shareholders, those who chose Option 8 of the SSIP will benefit most directly and significantly. For employees who have invested all of their eligible contributions in Option 8, the company matches their investment dollar for dollar. This is a

participants are in Option 8. All salaried employees, hourly employees not represented by a union agreement, and employees covered by union agreements that have adopted the plan are eligible to participate, provided one year of service has been completed.

For participating employees, the growth in the value of their savings has been impressive. While the other SSIP investment alternatives did well, Option 8 produced the highest total gain for participants, as shown in the table at left. Using the example of a participant who contributed \$100 per month over the past 14 months (April 1991 through May 1992), the total gain earned from Option 8 was 164%. This gain far outperformed all other SSIP investment alternatives.

This growth in value was the direct result of the dramatic increase in General Dynamics' stock price and the 100% company match to employees' investments in Option 8 versus the 50% company match to employees' investments in other options. Today, employees own more than 14% of all General Dynamics' shares, up from 9% at the end of 1990. ■

General Dynamics Savings and Stock Investment Plan						
For the period April 1991 through May 1992	Employee Investment		Company Stock Match		Total Value At 5/31/92	Gain/Employee Investment
	Amount	Value At 5/31/92	Amount	Value At 5/31/92*		
Fixed Income Fund	\$1,400	\$1,477	\$ 700	\$ 925	\$2,402	72%
Government Bond Fund	\$1,400	\$1,465	\$ 700	\$ 925	\$2,390	71%
Diversified Portfolio Fund	\$1,400	\$1,510	\$ 700	\$ 925	\$2,435	74%
GD Stock Fund (Not Option 8)	\$1,400	\$1,849	\$ 700	\$ 925	\$2,774	98%
Option 8 (100% GD Stock)	\$1,400	\$1,849	\$1,400	\$1,849	\$3,698	164%

* Value At 5/31/92 = \$64.625

top-of-the-line plan in American industry. Employees who have invested some or all of their eligible contributions in the other SSIP options receive a 50% company match.

Participation in Option 8 has been strong and growing. When the option first became available in April 1991, approximately 30% of participants in the SSIP plan began investing 100% of their savings in General Dynamics stock. Today, nearly 38% of

Core Businesses

continued from page 2

suppliers that produce top-quality, cost-effective weapons despite lower production volumes. And these suppliers will have the financial strength both to stay the course and to invest in the future;

◆ Our industry's work force, although smaller, will be able to feel more secure about their jobs;

◆ Our investors will have reasonable returns to encourage their continued support of the industry; and

◆ Our country will be able to take comfort that our national security is well served.

"Conversely, if we fail to effectively meet the challenge of rationalization, our nation, our armed forces, our employees and our industry's investors will all pay a high price for that failure. This is clearly not a time for our nation or our industry to pursue 'business as usual.'

"I outlined my thinking on the subject of rationalization in a speech last fall, and amplified those views in our recent annual report. With strong board support, your company is moving

forward in accordance with those views. General Dynamics intends to continue to be in the forefront of the rationalization of our nation's defense industrial base.

"As we respond to a rapidly changing marketplace, our tactics may change, but our basic strategy remains the same. An important element of our strategy continues to be building shareholder value. Our primary strategic objectives continue to be ensuring financial strength and flexibility to meet the challenges ahead, and focusing on what we do best — building on our core technical and manufacturing competencies, maintaining our commitment to high quality, and effectively utilizing the critical skills of our people.

"A year ago I told you that, because of the decreasing defense market, your management would review potential opportunities for further diversification into non-defense businesses. But, two independent studies which had found that the diversification failure rate was unacceptably high among defense companies, plus General Dynamics' previous experience with diversification, confirmed the company's long-standing

position that this would not be a wise course of action.

"A diversification strategy would entail unacceptably high risks and, therefore, could not be justified — especially at a time when your management's attention was critically needed to address the challenges facing its defense operations. Consequently, last September I announced our decision not to pursue commercial diversification as a response to declining defense markets. Instead, we would sharpen our focus on the core competencies in our major defense businesses — in short, we would do only that which we know best..."

"With our strategic focus better defined, we set some strict criteria for our core defense businesses:

◆ We concluded that only those businesses which were market leaders had any reasonable chance of emerging from the rationalization of the defense industrial base in positions of strength;

◆ In addition, we concluded that each core business should have the potential to obtain what I call 'critical mass.' By 'critical mass' I mean adjusting the size of the skilled work force,

modern plant, and investment to more reasonably match foreseeable future revenue. This is essential to obtaining improved efficiency. It is the key to lower costs for the customer, improved job security for employees, and reasonable returns to shareholders.

"We have stated that, where practical, General Dynamics would be willing to buy, swap, or merge programs or businesses in order to meet these criteria. If these core criteria cannot be met, then we will seek a better home for that business with another firm. We will act. We cannot accept the status quo.

"Therefore, we have determined that, going forward, General Dynamics will have four core businesses: Tactical Military Aircraft, Nuclear Submarines, Armored Vehicles, and Space Launch Systems. Each represents a 'major platform' business; each has a strong franchise in its marketplace; and each has the potential to make a solid financial contribution to our company and its shareholders in the future..." ■

Setting the Record Straight

Cable television's Home Box Office is showing a made-for-television movie titled "Afterburn," which is based on litigation following a tragic accident in 1982 that killed USAF Capt. Ted Harduvil while he piloted an F-16 in Korea.

General Dynamics received an early draft copy of the "Afterburn" script but was not provided a final version. The early script contained gross inaccuracies and misleading dramatizations, which were brought to the attention of the

producer. However, the film remains inaccurately slanted against General Dynamics.

In August 1989 a Federal Appeals Court in Atlanta, GA, cleared General Dynamics of any liability. The Supreme Court refused an appeal of that ruling in March 1990.

BUSINESS

Company Sharpens Competitive Focus

This article begins a series describing the front line efforts of General Dynamics' employees that produced solid gains for the company in 1991 and that are continuing in 1992.

As General Dynamics President and Chief Operating Officer James R. Mellor explained in the April 1992 GD World, General Dynamics' divisions, in their awareness of declining defense dollars, began taking steps in 1991 to improve quality, reduce costs, and boost competitiveness. Across the corporation employees mobilized to produce some solid wins — in sales, profit margins, reduction of costs, improvements to process, and customer service. The individual contributions of every employee resulted in a 14% gain in productivity for the company in 1991.

Fort Worth Sets Goals

The Fort Worth (FW) Division is focusing on increasing the company's role in achieving military air superiority for the United States and allied countries.

In 1991 FW improved its operations by reorganizing into three major business areas for strategic planning purposes: tactical military aircraft (including F-16 Programs, the F-22, and the AX), special purpose aircraft, and electronic combat. Near-term goals were established that include continuation of the USAF F-16 procurement and winning the AX program. Longer-term goals stress process improvements that would lead to 'contractor of choice' status for U.S. government programs.

For example, the Fort Worth Division has built a reputation for producing the world's most cost-effective tactical fighter — the F-16 Fighting Falcon. But even though the F-16 continues to enjoy popularity both at home and abroad, actions over the next two years will optimize production processes to adjust to lower USAF F-16 deliveries in the future. The goal is

to improve quality while keeping the aircraft's cost at current levels in terms of manufacturing hours, material costs, and overhead. Specifically, the division will improve F-16 production and delivery schedules and eventually reduce production span time.

Overseeing the effort is B. Edward Ewing who was recently appointed to the new position of vice president of operations, Aircraft Programs Group.

In another action, Integrated Product Development (IPD) teams were formed for two major programs related to F-16 modification projects. IPD can reduce development span times and keep costs down by avoiding problems before full production is begun. IPD is instrumental in obtaining new business as well and has been identified by the U.S. Air Force as a characteristic distinguishing the F-22 program from other aircraft development efforts now slated for budget cuts.

organization in 1991 — General Dynamics Aircraft Services Group headquartered in Fort Worth. This new structure aligns technical services with the products they support and enhances the company's ability to provide full-service, life-cycle support.

Another goal, improved asset management, led the Fort Worth Division to sell part of its General Dynamics West facility with a lease-back agreement, freeing cash for the company while allowing full use of the Building 500 complex for five years. To lower costs and increase efficiency, the division also began the process of vacating leased office space in Fort Worth and returning employees to the main location, government-owned Air Force Plant 4. The home of General Dynamics Fort Worth Division, Air Force Plant 4, officially began operation 50 years ago on April 18, 1942, and will soon be the USAF's only fighter production line. ■



The 50th Anniversary of Air Force Plant 4 in Fort Worth was marked with an Open House on May 16. The official Open House logo, depicting all the major aircraft programs conducted at the plant since 1942, was designed by GD employee Earl Williams and selected from among approximately 150 competing logo designs.

New quality initiatives have also been implemented to improve in-process quality and engineering performance. For example, Statistical Process Control, a statistical tool for charting and measuring quality, is being phased into numerous factory departments to isolate causes of substandard parts in manufacturing.

F-16 support activities previously conducted by General Dynamics Services Company were placed under a new

The next issue of GD World will feature Land Systems Division.

BUSINESS PERSPECTIVE

General Dynamics' efforts to adapt to a sharply contracting defense budget and a shrinking defense market by positioning itself as a market leader in four major platform businesses have required many difficult, but necessary, decisions.

Since the first quarter of 1991, the company's new management team has been implementing a business strategy that places additional emphasis on operating efficiencies and financial performance and, at the same time, maintaining technical excellence and high quality. The rapid and startling changes in the geo-political situation in late 1991 dramatized the company's prediction of permanent reduced defense spending in future years and validated the concept of "rationalization" of the industry first introduced by CEO William A. Anders in October 1991.

For General Dynamics and its competitors, the current situation in the defense marketplace boils down to too many contractors and not enough contracts to go around. Some in the defense industry are beginning to follow the company's lead in taking the necessary actions to create a smaller but more efficient Defense Industrial Base, while others are acting as if the traditional "upswing" in defense spending will happen again. The new management team at GD believes it will not.

Based on this reality, Chairman Anders told shareholders at their annual meeting that the businesses categorized as "non-core" — commercial aircraft subcontracting, material resources, electronics, and sealift operations — would be sold as markets permit and adequate transactions could be negotiated. Meanwhile, he emphasized, they are vital and important operating units of General Dynamics and their future success and longevity depends on everyone involved remaining dedicated to enhancing the strength each represents in its respective marketplace.

Success in adapting to the new defense realities will ultimately provide staying power for the company and greater job security for the smaller work force that will characterize not just General Dynamics but the Defense Industrial Base of the future. By segregating the company's businesses as "core" and "non-core," a clear message is sent to the company's government customer — that the company will be viable, is here to stay, and is aggressively managing its own destiny in the new era of reduced defense spending. These designations also highlight the financial performance and viability of both business categories to investors, members of the financial community, potential buyers looking to build their market strength, or possible business partners. ■

Non-Core Businesses Will Gain Market Strength When Combined with Operations of Other Companies

WASHINGTON WATCH

House Includes More F-16s in FY 93 Defense Appropriations

On July 2 the House of Representatives approved a \$252.6 billion Defense Appropriations Bill for FY 93. Although Senate actions at press time demonstrate that we have a long way to go yet (see "Senate Update"), General Dynamics is encouraged by the provisions in the House bill to include \$615 million for 24 F-16s in 1993 and directing the U.S. Air Force to order an additional 24 in 1994. The Bush Administration had planned to stop buying F-16s after the 24 provided for in FY 93.

These decisions reduce somewhat the uncertainty in the defense industry since Defense Secretary Dick Cheney announced permanent reduced defense spending in early 1992. They also reflect greater scrutiny of defense industrial base issues than earlier in the year when the new DoD acquisition strategy for the future was first revealed.

Despite a number of issues related to the DoD strategy (see "A 'Rational' Approach" on page 2), a general consensus has

developed that defense spending has to come down and that, accordingly, the overcapacity in the defense industrial base has to be reduced so that the number of defense suppliers will align realistically with the reduced demand for defense products. With this concept of "rationalization" of the industry — first introduced by General Dynamics Chairman and CEO William A. Anders in October 1991 — taking hold throughout the defense community, leaders from industry, government, and Congress have been hard at work for months to arrive at procurement strategies and ways to structure and fund programs that will guarantee U.S. national security interests as well as sustain, nurture, and stabilize the nation's defense industrial base. Of the many governmental reports and white papers issued since January, perhaps most reflective of the changed outlook is one from the congressional Office of Technology Assessment (OTA).

OTA's June 25 report advocates extensive procurement reform and a "prototyping-plus" strategy that involves 1) continuous

Senate Update

August 6, 1992

All of the committee actions described below are subject to the full vote of the Senate and following that, the House and Senate will debate a compromise measure to present to President Bush.

□ In a preliminary defense budget markup, the Senate Armed Services Committee, unlike the House of Representatives, "zeroed" 1993 funding for the 24 F-16s requested in FY 93. This action, if it sticks when the full Senate votes on the defense authorization, sets the stage for debate in a House-Senate conference.

development and 2) limited production of selected prototypes during periods between full production programs. This kind of thinking is in line with General Dynamics' advocacy of selected low-rate production of critical weapons systems as a balanced and reasonable approach to preserving the defense industrial base under reduced defense spending.

□ The Senate Armed Services Conventional Forces Subcommittee approved the Bush Administration's \$2.2 billion request for the F-22, essentially restoring a \$200 million cut made earlier by the House.

□ Prospects for the Superconducting Super Collider have improved with a full Senate vote to spend \$500 million in FY 93 on the project.

□ FY 93 funding for the National Aero-Space Plane is in jeopardy in both houses of Congress now with more than one Senate Armed Services Subcommittee denying funds for the program. ■

Nonetheless, lawmakers can be expected to continue tightening the cap on future defense spending. General Dynamics has been following closely the actions of the U.S. Senate since it began markup in late July of its version of a FY 93 defense budget. That process should conclude in

Continued on page 2

BUSINESS

Company Sharpens Competitive Focus

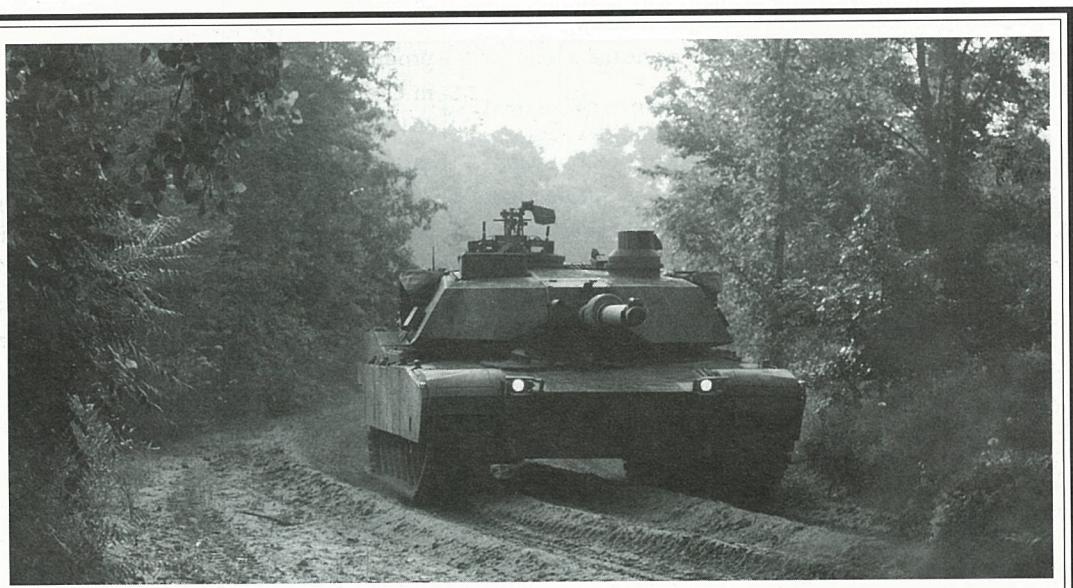
Part II. Land Systems Prepares for the Future

This is the second article in a series describing the front line efforts of General Dynamics employees that produced solid gains for the company in 1991 and that are continuing in 1992. The June edition of GD World featured the Fort Worth Division.

Land Systems Division had an extraordinary year in 1991. While continuing to build the world's greatest main battle tank, the division expanded its business base, drove down overhead costs, and increased its efficiency.

With all defense companies competing for a markedly smaller defense budget, "survival of the fittest" took on new meaning. Success in a rapidly shrinking marketplace requires strategies to achieve profits at lower production rates, and recognizing this, George P. Psihas, president of Land Systems, structured a strategic plan that changed the direction and focus of the division's business. Objectives and action plans to support the strategy were developed that challenged all employees to be more fully involved in continuous improvement processes.

Building on a vision for the future, Psihas brought a "bottom line" focus to budget planning for all departments during 1991, and efforts to



increase efficiency and broaden the division's base of products were intensified. Senior management established new internal controls that have enabled the division to track its performance to budget more closely; succession planning was also given added emphasis as the division focused on its future. At the same time, Land Systems integrated and more tightly focused its affiliates — joint ventures and subsidiaries — on division goals so that they, too, can add to the bottom line profitability of the division.

Decline in Domestic Demand Prompts Shift in Focus

Land Systems has earned an international reputation as the world's foremost supplier of main battle tanks — a reputation that was

Saudi Arabia has ordered 465 M1A2 tanks to be delivered over a three-year period beginning in April 1993.

Continued on page 4

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FY 93 Defense Appropriations

continued from page 1

September or October when a House-Senate Authorization and Appropriations Conference will be called to iron out any differences between their respective spending packages. Fiscal Year 1993 begins on October 1 and both Republicans and Democrats would like to see this process completed before the November 5 presidential elections, according to General Dynamics Senior Vice President of Government Relations, Alan C. Chase.

F-16 Aircraft and Abrams Tanks

The prognosis for these two major weapons platforms has brightened as Congress moves toward FY 93 defense bills to send to President Bush. The continued funding for 24 F-16 Fighting Falcons in FY 93 and 24 more in FY 94 could be a sign that lawmakers recognize the vital need for selected low-rate production to bridge production gaps between existing and new technology.

Without these actions, domestic production of the F-16 would have ground to a halt in 1994 when the Air Force was scheduled to take delivery of the final Fighting Falcon. Were this to transpire, General Dynamics is concerned about how this stoppage would be viewed by current and potential foreign customers and its impact on future foreign sales. The company has steadily increased the number of countries who buy the F-16 — 18 as of July 1992 — and the combination of USAF procurement and foreign sales has helped to keep the unit cost of the aircraft down, allowing the company to build on the F-16's reputation as the world's most cost-effective tactical fighter.

Perhaps not as tangible but equally as important is how the potential production gap between the F-16 and the start up of F-22 rate production in the Year 2000 would affect worker skills and manufacturing competencies. The concern is that such gaps would diminish the highly skilled and specialized work force that has taken years to build and would erode essential manufacturing skills with no guarantee that either could be expeditiously reconstituted if a national emergency occurred after a production hiatus of several years.

General Dynamics' Senior Vice President of Contracts, Pricing, and International Offset, D. Blaine Scheideman, says that the Pentagon's next Future Year Defense Plan, which is currently being prepared, will provide a forecast of how various defense programs, such as the F-16 and Abrams tank upgrades, will fare through the end of the decade. Air Force Secretary Donald Rice told reporters at the inauguration of the new Air Force Materiel Command, now the service's sole acquisition agency, that the Air Force is including additional buys of F-16s in its future-year budget and has "lots of upgrades and enhancements planned for that program" which could carry F-16 production past the Year 2000. At a House Armed Services Committee hearing on April 29, Gen. Merrill A. McPeak, the Air Force chief of staff, said the USAF plans to start replacing its F-16 fleet with a new multirole fighter around the Year 2015.

The recognition by government leaders that production gaps can jeopardize U.S. national security and economic interests is gaining momentum for other weapons systems as well. The FY 92 House Appropriations Bill boosted the outlook for continued Abrams main battle tank production at General Dynamics Land Systems Division with funding of \$32 million for M1 tank management and \$25 million for M1 tank modifications. The House also expressed support for the upgrade of the

M1 to M1A2 capability by rejecting the Army's plan to upgrade the M1 to the M1A1D, a less robust modification that would result in a less capable configuration and one which sustains less of the tank industrial base.

A footnote on tank production in the FY 92 defense budget (see June 1992 GD World, page 1), the Senate Armed Services Committee received word from the DoD Comptroller on July 2 that DoD was ready to release \$225 million to upgrade older M1 tanks to M1A2 specifications. This action was required by the rescission compromise signed by President Bush on June 4. On July 9 an industry trade paper, *Defense Daily*, reported that "Congress views the tank conversion program as a key industrial base issue and wants the money spent towards an upgrade of basic

M1s to a full-up M1A2. This way, the tank assembly lines in Detroit, Michigan, and Lima, Ohio, are kept warm [sic] and suppliers are left intact." Another major item of welcome news, the Kingdom of Saudi Arabia on July 12 confirmed its commitment to the M1A2 as its main battle tank. GD will demonstrate the M1A2 in Kuwait and Saudi Arabia during August 1992.

Submarines and Space Systems

Two program areas that General Dynamics will be watching closely in the Senate budget process are the U.S. Navy's advanced submarine technology program, which will affect the Navy's New Attack Submarine, sometimes called the *Centurion*, and the

Continued on page 5

A "Rational" Approach to the Defense Industrial Base: Ensuring Military Superiority In the 21st Century

Earlier in the year General Dynamics' President and Chief Operating Officer James R. Mellor was honored to present the prestigious 1992 Bernard Baruch Lecture before the National Defense University. He joined a host of distinguished honorees who have explored the important links between U.S. industry and the military of the nation before this forum. Bernard Baruch was a U.S. financier and statesman recognized worldwide for the vital role he played in assuring that the munitions and materiel needed to prevail in WWI — the most massive war of attrition in all of history — were provided.

Mellor's assessment of the current and future state of the defense industrial base and his realistic views on the new procurement approaches being discussed — such as prototyping and selected low-rate domestic production — have gained credibility and supporters in Congress and in various government agencies (see "Washington Watch" on page 1). He told the audience that an industry-military partnership continues to be "vital to our national security," describing the global political situation in the 1990s as "even more complex and potentially ominous than during the Cold War era" because of continually evolving events and "would-be despots seeking to smother new democratic movements." Consequently, he continued, it becomes extremely difficult to define the military force structure and weapons systems that will be needed in the future.

In this context, the high standards for management skills and the economic insights that epitomized Baruch take on particular relevance. As both the military and the defense industry undergo dramatic reductions and restructuring in 1992, a shared concern is how to accomplish these objectives without destroying the basic capabilities that might be critically needed in the future. As Mellor phrased it, ". . . How can we 'drawdown' this oversized defense industrial base? How do we make a porpoise out of a whale? More importantly, how can we do so while ensuring that America's defense remains second to none?"

Mellor firmly rejected the notion of an "industrial policy" to provide an overall structure for this effort,



James R. Mellor

saying that the forces of the marketplace, not government industrial policy, should drive the process of "consolidating the best resources into a smaller, more focused Defense Industrial Base for the 21st century . . . Market forces do only one thing, and they do it very well. They reward performance. Given the opportunity to respond to those forces, industry is self correcting and will do the job."

Mellor described the principles for rationalization of the Defense Industrial Base that General Dynamics has developed and is applying to its efforts to adjust to reduced defense spending and the dramatically smaller markets predicted for the future. "This is a set of principles that many of our peers would be well advised to emulate," he remarked. "We believe that this process of rationalization, if applied throughout our industry, will ultimately bring supply — the capacity of the Defense Industrial Base — into balance with the demand — the future R&D and procurement spending available here and abroad in the 1990s."

The government's role in all of this, he asserted, is to "allow — even tacitly support — the rationalization of the defense industry." This role is underscored by the fact that the defense industry uniquely serves a single customer, and "because of its 'single customer'

Continued on page 3

Berkshire Hathaway Invests in General Dynamics

Warren Buffett, chairman of Berkshire Hathaway Corporation, informed General Dynamics on July 22 that his corporation, through two of its insurance subsidiaries, had acquired 4.35 million shares of General Dynamics common stock, or approximately 15% of the company's outstanding shares. Berkshire Hathaway is a highly respected holding company with substantial investments in a number of major corporations and

operations in publishing, insurance, and various other consumer items.

In commenting on this development, General Dynamics Chairman and CEO William A. Anders said, "We are pleased with this significant expression of confidence in General Dynamics and its new management team and welcome Berkshire Hathaway as a substantial shareholder." ■

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Company Names Core Business Presidents

On August 5 General Dynamics announced the latest step in the company's ongoing effort to empower each of its major platform businesses to take those actions necessary to more efficiently and effectively perform for its customers in light of continuing changes in U.S. defense budgets and priorities.

The following individuals were named as presidents of their business units: Gordon England, president of Aircraft Systems (military aircraft); Roger Tetrault, president of Electric Boat (nuclear submarines); George Psihas, president of Land Systems (armored vehicles); and Mike Wynne, president of Space Systems (space launch systems). England will remain a corporate executive vice president of parent company General Dynamics, and Tetrault, Psihas, and Wynne will continue as corporate vice presidents.

This decision shifts the authority for both business strategy and financial performance to the senior management in each of the core businesses, giving them increased accountability for capital structure, business strategy, product and program development activities, business alliances, and customer, legislative, and employee relations.

According to General Dynamics Chairman and CEO William A. Anders, "Each of these four businesses represents a strong franchise and each would be a Fortune 500 company on a stand-alone basis. Each business must build on its strengths to ensure that it emerges from this period of rationalization as a clear leader in its marketplace." Accordingly, this new focus "will permit core business to continue to serve this nation's evolving defense needs with high-quality, cost-competitive products." ■

A "Rational" Approach

continued from page 2

role, the Department of Defense's acquisition strategy essentially defines the market forces which our industry must serve." Therefore, Mellor concluded, "the customer and the supplier are *de facto* partners in the process of reconfiguring our nation's Defense Industrial Base . . . [and] any discussion of the rationalization of the Defense Industrial Base must also consider the impact of defense acquisition policy on the industry and its markets."

Mellor agrees that new procurement approaches are needed to address a fundamentally changed world, but he insisted that the debate between government and industry should be elevated to focus on suggestions for what might be right rather than focusing on what is wrong. He illustrated the importance of this precept with a practical evaluation of the real-world usefulness of proposed procurement policies in five areas: R&D and production, commercial items, flexible manufacturing, modernization and upgrade work, and international sales.

Much of the debate and publicity in the proposal to emphasize R&D and de-emphasize production has centered on the subject of prototyping and the assumption that industry can "bring all of our advanced systems development up to 'extensive prototyping' and then 'put it on the shelf until it is really needed,'" said Mellor.

There are two reasons why this approach, "tried in the real world," would be astronomically costly to government in both dollars and time, Mellor explained. First, prototypes are hand-built, and it's just not possible for such prototyping to provide enough information to develop the kind of quality, efficiency, and performance needed for true production. Citing his own experience in the initial production of numerous major weapons systems over the years, Mellor said that it was not uncommon to encounter some very fundamental problems in production that had not surfaced during prototyping or manufacturing design. "The hard fact is that, while manufacturing techniques have progressed significantly, this is still as much an art as it is a science."

Mellor described tank production to illustrate the

second reality — certain key skills needed for major weapons platform production are just not available outside the Defense Industrial Base. "The only place a worker can learn to efficiently weld the armor plate used in state-of-the-art tanks is on the production line of a modern tank plant," he explained. "The metals involved contain spent uranium, and the techniques used are unique to that product . . . a typical commercial factory requires about eight welding certifications among its workers. Our tank plant in Lima, Ohio, requires more than 50!"

A second procurement policy idea would have the military depend on commercial industry for more and more of its needs. While not applicable to General Dynamics' major platforms, this has some merit, Mellor thinks, where military items are virtually indistinguishable from commercial items. Unfortunately, however, government specifications and paperwork requirements often discourage commercial companies from participating in the military markets for these items, and, furthermore, past efforts to streamline the procurement process by simplifying procedures and rethinking specifications have seldom been successful. "Perhaps," said Mellor, "the substantial reductions in procurement dollars will finally now provide sufficient incentives to generate real progress in this area."

Mellor described a third concept being proposed — flexible manufacturing. Flexible manufacturing takes advantage of recent advances in production technology that permit quick, efficient shifting of production lines

from one product to another within the same plant. The theory is that in some areas of defense procurement specialized military items can also "piggy-back" onto production capacity dedicated primarily to commercial products.

However, Mellor explained, while the military and commercial items co-produced under flexible manufacturing need not be virtually identical, there must be a great deal of similarity between them. The "family" of products manufactured in this flexible facility must also have a sizable aggregate production volume in order to keep the factory's overall cost-per-unit at reasonable levels. Therefore, flexible manufacturing is "totally impractical for the more complex and unique major weapons systems."

Dropping activities that are not a part of the main mission underlies a fourth concept being advocated to stretch scarce DoD dollars: transfer of modernization and upgrade work. In the private sector, for example, General Dynamics sold its nonproprietary data processing function as part of the company's decision to shed peripheral non-defense activity as much as possible and focus sharply on the company's defense systems competencies. Applying this concept to the government side, Mellor suggested that it might make good economic sense overall for DoD to "outsource" or transfer modernization and upgrade work from the various arsenals, rework facilities, shipyards, and depots run by the military services to the defense industry. In this way only the front-line maintenance work would be kept with the users "where it appropriately belongs."

Finally, relaxing or creating policies that would permit more overseas sales of defense products is another strategy being widely discussed as a way to maintain the U.S. Defense Industrial Base under smaller domestic budgets. Mellor warned, though, that "if domestic procurement of a weapons system ceases entirely, foreign sales will atrophy . . . DoD sales represent a sort of 'Good Housekeeping Seal of Approval' and assure other countries that they are buying mainstream products."

There is also a question of support, Mellor explained. "Continued DoD procurement means that spares will be available, upgrades will be pursued, doctrine will be kept fresh, and 'bugs' will be identified and fixed. It's like buying an 'orphan' computer. It might be great. It might even be superior. But if it's not in the mainstream of the market, support could disappear overnight."

Continued on page 5



General Dynamics Chairman and CEO William A. Anders (l.) presented a model of the company's Trident submarine to the U. S. Strategic Command (STRATCOM). General George L. Butler, commander-in-chief of STRATCOM, accepted on behalf of the nation's new joint — Air Force, Navy, and Army — nuclear command, which became operational on June 1.

In making the presentation Anders said: "This system and the other elements of the Triad have kept the peace for over 45 years. In my opinion, the reliability and effectiveness of the sea-based leg has made major contributions to this new world order which promises new relationship between old adversaries."

1992 General Dynamics College Scholarship Award Winners Chosen

Five children of General Dynamics employees were selected from an original pool of 97 applicants on the basis of need and merit.

High school seniors who are children of current, retired, or deceased company employees are eligible to

apply provided they plan to major in engineering, physics, mathematics, chemistry, computer science, or business. The Citizens' Scholarship Foundation of America administers the award. Call 507-931-1682 for information.



Amanda Curtis
\$1,500

Major: Chemistry

Employee: Samuel D. Curtis
Freeman United



Alice Gifford
\$5,000

Major: Physics

Employee: Donald Gifford
Fort Worth Division

BUSINESS

Land Systems

continued from page 1

reinforced in the Persian Gulf War. The division's M1A1 Abrams main battle tank, which became the centerpiece of the coalition forces' 100-hour ground war, performed superbly on the battlefield without sustaining any combat losses to enemy tanks.

As the domestic demand for main battle tanks started to decline, however, the division began shifting its focus to the international arena to concentrate on a widely recognized need for self-defense in the Middle East. Results to date are encouraging. Saudi Arabia has ordered 465 M1A2 tanks to be delivered over a three-year period beginning in April 1993 and is considering an additional 235. Although the contract will not be definitized until January 1993, \$300 million has already been invested and long lead funding contracts issued. Other prospects for sales of M1A2 tanks internationally are good: the United Arab Emirates has asked for price and availability on 390 tanks, Kuwait may want to buy 200 plus, and a bit further north, Sweden is interested in purchasing about 200 M1A2s.

Meanwhile, in order to improve its critical mass, Land Systems is leveraging off of its proven track record in the heavy armored vehicle business by implementing a new strategic plan to broaden its customer and product base to include armored vehicle systems in a lighter weight class, such as the Advanced Amphibious Assault Vehicle, and Abrams tank derivatives, such as the Recovery Vehicle and the Heavy Assault Bridge.

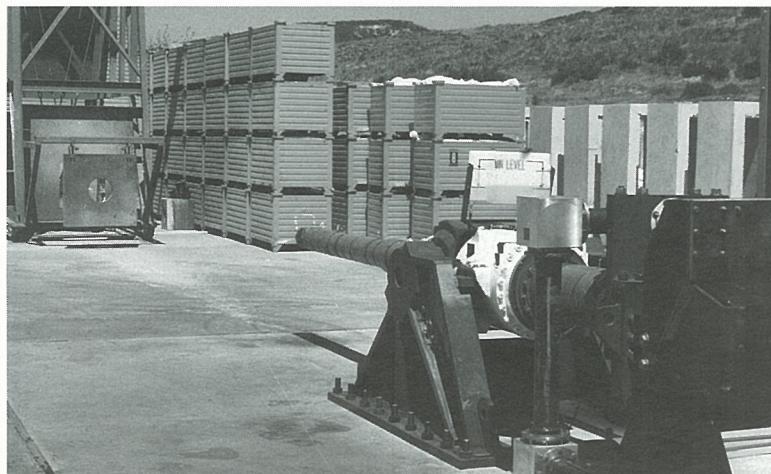
Rightsizing and Manufacturing Improvements Achieve Positive Results

A division-wide "rightsizing" streamlined management, shortening communication paths while at the same time increasing management's span of control. While continual work force adjustments were also being made to accommodate changing production needs, product quality still remained at the forefront of worker concern. For example, when the division consolidated tank assembly into one facility — the Lima Army Tank Plant — Detroit Arsenal Tank Plant employees proudly made certain that the last tank produced at their location was a "zero defect" tank. All tanks are made "perfect" by the time the U. S. Army signs its DD250 and takes possession, but, in this instance, army inspectors could not find a single defect the very first time it was presented to them for inspection.

Manufacturing process improvements during 1991 produced notable gains in productivity, quantity, and profitability throughout the division. While hours per unit decreased by 6.4%, defects per unit decreased by 25.4%. On first inspection, 34.4% of all main battle tanks were delivered with "zero defects," and 99% of all gun mounts produced at the Detroit Arsenal Tank Plant had "zero defects." Division overhead costs were reduced by 4.9% from 1990.

The Lima Tank Plant achieved manufacturing improvements as well. Workers made the transition from metal arc welding to pulsed gas metal arc welding, and the use of robotic welding was increased in order to improve dimensional repeatability and produce higher quality products faster. The division also introduced Multiple Machining Operation (MMO) at its Scranton Plant. MMO is a concept that uses one machine operator to run two or more

Advanced Technologies for Future Battlefields



This 120mm ET Gun is being tested for the U.S. Army.

Land Systems is no longer a monolithic, one product division. Its portfolio of businesses, which covers the full spectrum of armored vehicles and associated support systems, is amplified by electronic upgrades that will revolutionize the battlefield and advanced technologies that will make 21st century weapons systems more lethal and more survivable. Two of the future-oriented programs are 1) electrothermal (ET) gun technology and 2) composite structures and armor technology.

ET Gun Technology

In 1990 Land Systems built the Mason Technology Center to conduct research and development of ET gun technology. This technology has applications for main battle tanks, field artillery, and naval ship guns. Situated on 264 acres in Apple Grove, West Virginia, the facility includes a target area with a canopy, an instrumentation building, a power supply building, and administration facilities. Two full-time employees are augmented by division engineers for specific projects.

ET gun technology is a new patented process that replaces conventional gun powder with a high-energy electrical pulse provided to a chemically active but non-explosive propellant in a gun chamber. It can generate one-and-one-half-to-two times the velocity, or twice the energy, of a conventional gun system. That translates into greater ranges and target penetration.

"It's probably the first significant change in gun technology since gunpowder," said Bruce Van Eussen, ET-Gun program director. "ET technology has exciting possibilities because it will be more efficient, less expensive, and much safer than conventional propellants, and it can be adapted to guns now in use either using current ammunition or ET ammunition interchangeably."

At the present time, Land Systems is conducting research on 60mm guns for the U.S. Navy and 120mm guns for the U.S. Army.

machines simultaneously. These and other process improvements divisionwide improved "the bottom line" and made this major platform business more competitive and more profitable.

In a corporate restructuring action, General Dynamics Services Company (GDSC) became a wholly-owned subsidiary of Land Systems in 1991. GDSC provides product training and technical support once a sale is

Composite Structures and Armor Technology

While lethality is important, survivability is the soldier's first concern! Survivability is also the division's number one priority, which is why composite technology is high on its list of projects for the future.

Survivability for the current 68-ton Abrams main battle tank relies mostly on sophisticated armor packages that include the use of depleted uranium, a heavy metallic element with a weight two-and-one-half times greater than steel. As the need for lighter-weight, very transportable but highly survivable armored vehicles increases, composite technology will become even more important.

The purpose of composite technology research, which relies heavily on the use of polymers, plastics, carbons, and other materials, is to develop designs using high-strength, fiber-reinforced composites that are extremely strong yet very light. Recent applications include the air intake system and the roadwheels on Abrams tanks. Future composite designs will have much broader applications.

On June 23, 1992, the division received a \$2 million contract from the U.S. Army Tank-Automotive Command to study the application of composite materials to light-weight, armored combat vehicle design. Phase I of the potential three-phase program requires the division to assess different material technologies, conduct ballistic tests of components, and develop concepts for a 17-ton and a 30-ton vehicle using the new materials, which, by contrast, would be one-fourth and less than one-half, respectively, the weight of the M1A2. Phase I will take two years and will be completed at the Division's Central Office Complex in Michigan under the guidance of David K. Rock, chief of material engineering.

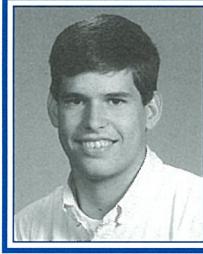
Following completion of Phase I, the U.S. Army will evaluate the entries and award a contract for Phase II, which will require the winning company to build a demonstrator vehicle to be tested and evaluated before entering the prototype phase of the program. ■

consummated. For example, these services are being provided to Saudi Arabia for the introduction of M1A2s into the Royal Saudi Land Forces. Egypt is being provided manufacturing technical assistance as the Egyptians build a new tank factory for the coproduction of Abrams tanks.

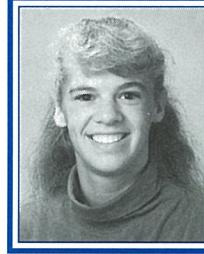
Continued on page 5



Roberta Louise Pickett
\$5,000
Major: Business/Accounting
Employee: Robert Louis Pickett
Electronics



Andrew Robbins
\$5,000
Major: Aerospace Engineering
Employee: Jackson S. Robbins
Fort Worth Division



Megan Taylor
\$1,500
Major: Engineering
Employee: Thomas Taylor
Electric Boat

FY 93 Defense Appropriations

continued from page 2

Superconducting Super Collider (SSC) program, a giant atom smasher set for construction in Texas. The House appropriation cut \$58 million from the next-generation nuclear attack submarine and canceled the SSC.

If the Senate Armed Services Committee agrees with the House, the funding cut for advanced submarine technology could delay the award of the first *Centurion* construction contract. According to Chase, this could "slip the program farther to the right and create a further gap with Seawolf production." In 1991 the U.S. Navy selected General Dynamics Electric Boat to design the propulsion plant for the new attack submarine.

GD is one of three leading magnet contractors for the SSC, which is highly touted by the nation's scientists in high-energy physics for the potential technological innovations and commercial applications in transportation and energy production and distribution that could spin off from the program. The magnets themselves have spin-off potential while the collider could create a quantum leap forward in basic, sub-atomic physics. Regardless of the House action to delete SSC funding, officials at General Dynamics Space Systems Division say they are continuing "on course" with work on the program and "are confident that as the budget process unfolds, the SSC will be well supported." As Chase anticipated (see "Senate Update" on page 1), the cancellation was "fought vigorously by the Senate," and the funding issue will now have to be resolved in the House-Senate Appropriations Conference.

In the space launch business, General Dynamics is in a "follower market" in that federal spending for satellites and payloads is a significant portion of the Atlas and Centaur business base. In July, the House Defense Appropriations Bill increased the Air Force budget to \$250 million to support the development of a new National Launch System, but significantly reduced the Titan 4 Centaur and the Navy's UHF satellite program for fleet broadcast. These launch programs are being closely monitored as the defense budget moves through the Senate.

In addition to the defense committees, the Space Systems Division keeps a close watch on NASA

oversight committees. Here again, NASA spacecraft for exploration and communications are an important part of the Atlas business for civil space and commercial launch services. The House NASA Appropriation reduced the Earth Observing Systems (EOS) budget by \$75 million and the Tracking and Data Relay Satellite Systems (TDRSS II) by \$65 million. With nearly a \$15 billion annual budget and an agenda of very high-cost projects, such as Space Station *Freedom* and returning to the Moon and Mars, NASA faces difficult budget challenges.

As the U.S. Senate hammers out its version of the FY 93 defense budget, General Dynamics' Washington Office is closely monitoring developments and making certain that lawmakers are fully informed about how these programs and other programs, such as the National Aero-Space Plane, the F-22, and the Medium Launch Vehicle III, relate to industrial base and national security concerns. ■

A "Rational" Approach

continued from page 3

An additional reason to maintain at least a low level of domestic procurement, Mellor continued, is unit cost. "The investment in research, development, and tooling for production of a sophisticated system is quite high. And, even a small amount of low-rate domestic production — a 'trickle' rate — can significantly reduce the per-unit burden of this overhead on all production, making our defense companies more price competitive in foreign markets."

In his closing remarks Mellor emphasized that while the procurement policy options under intense review by DoD, Congress, and others can, if properly utilized, help stretch scarce DoD dollars, they "simply do not address the real fundamental problem . . . the dramatic overcapacity in our industry. These purported 'solutions' are simply short-term tactics which may, or may not, be useful in any given situation, or at any particular time . . . the long-term strategic answer continues to be the effective rationalization of the Defense Industrial Base . . . so that it can effectively and efficiently support the restructured military marketplace. Supply must be brought into balance with demand if our country is to have an effective and efficient defense industry in the future."

The Media Research Center in Washington, DC, published an article in its monthly magazine criticizing the HBO movie "Afterburn." (See June GD World, page 4.) It stated: "There is no evidence to support a cover-up by the Air Force, and the innocence of General Dynamics has been decided by the courts. 'Afterburn,' however, is guilty of distorting the facts and promoting distrust of the men and women who keep this country secure." ■

Setting the Record Straight

Reflective of actions taken by General Dynamics in the past year, Mellor added that "companies in our industry should focus on their core competencies, and buy, sell, or merge operations in order to create financially strong, efficient suppliers truly able to design, produce, and provide life-cycle support for high-quality weapons systems at a reasonable cost." If effective rationalization of the Defense Industrial Base is achieved, he concluded, all concerned will benefit:

▲ "Our armed forces will have defense companies that produce top-quality, cost-effective weapons systems despite lower production volumes. And those companies will have the financial strength to both stay the course and invest in the future;

▲ Our industry's work force, although smaller, will be able to feel more proud and secure about their jobs, and we all will reap the benefits of a stable and committed work force;

▲ Our investors will have reasonable returns to encourage their continued support of the industry; and

▲ Our country will be able to take comfort that our national security is well served." ■

Land Systems

continued from page 4

Technology Advances Solidify Business Base

When asked to comment on the division's future, Psihas said: "The future holds great promise for us as we begin to introduce exciting new electronic capabilities that increase the effectiveness of combat forces and, coincidentally, add potentially to our business base."

As an illustration, central to the M1A2 system design is the tank core vetronics (vehicle electronics) system, which is the basis for exceptional "fightability" improvements to command, control, and communications. The tank's state-of-the-art digital information processing

system enables tank crews and commanders to increase the time available for them to perform necessary battle tasks significantly. This result, in turn, substantially improves force effectiveness. Integration of the digital information processing system with other elements of the battlefield, such as helicopters and infantry fighting vehicles, will revolutionize strategic land warfare doctrine.

The division has proposed a program to U.S. Army officials to modernize its tank force by upgrading existing older model M1s to M1A2 configuration rather than focusing on new tank production. With defense funds becoming increasingly scarce, it is unlikely the planned Block III (next generation) tank will be fielded before the Years 2010 or 2020, and so

adding vetronics upgrades in the form of state-of-the-art digital information processing systems to older model tanks is a cost-effective way to modernize the force now. It is also an effective means for preserving the tank industrial base, according to Psihas.

Research and development efforts in high technology areas such as composite armor, electrothermal gun technology, and improved vetronics are underway as the division focuses on the future. (See "Advanced Technologies for Future Battlefields" on page 4.) In addition to the electronic advances developed for the M1A2, the division has army contracts to study the application of composite materials to light-weight armored combat vehicles and electrothermal (ET) gun technology. ET gun technology holds

great promise for future application to tanks, ships, and artillery, and because electrothermal guns can achieve one-and-one-half-to-two times greater muzzle kinetic energy of the projectile than a conventional weapon, it is more lethal. Further, because the technology uses electricity and a non-explosive propellant, it is much safer for the crews who fire it.

"Despite a declining defense budget, we remain a strong, viable armored vehicle business with a global outlook and excellent prospects for sustaining our business and profits at levels we have consistently experienced over the years," said Psihas. ■

JUNE 1992 SSIP RATE OF RETURN

SALARIED	1990	1991	1992	HOURLY	1990	1991	1992	GD Stock Closing Price	1990	1991	1992
Government Bonds	8.1%	10.0%	9.8%	Government Bonds	8.2%	9.8%	9.5%	32.000	41.875	71.375	
Diversified Portfolio	16.1%	3.9%	16.5%	Diversified Portfolio	16.3%	3.7%	16.1%	Average Purchase Price	33.203	42.006	65.427*
Fixed Income	10.2%	9.9%	10.3%	Fixed Income	10.2%	9.6%	10.1%	Stock Growth	-45.1%	30.9%	70.4%
General Dynamics Stock	-43.3%	34.0%	73.2%	General Dynamics Stock	-43.3%	34.0%	73.2%	Dividends	1.7%	3.1%	2.7%

General Dynamics dividends are included in the Rate of Return of General Dynamics Stock.

*Represents average share price on purchases made through 3 June 1992. Purchases of Company Stock were suspended on 8 June 1992 because of the company's offer to purchase shares.

FINANCIAL NEWS

Core Businesses Show Increased Earnings

General Dynamics' performance during the first half of 1992 bodes well for the company's core businesses, reflecting, as well, Chairman and CEO William A. Anders' pledge to "continue our efforts to ensure that as this nation's defense industrial base undergoes rationalization, each of our businesses will emerge structured to better perform for our customers, our shareholders, and our employees."

Despite the current budget environment, earnings and backlog increased, cash flow remained strong, debt reduction continued, and each of the four core businesses showed improvement with the biggest jump in space launch operations.

Earnings. Earnings from continuing operations for the first half of 1992 were \$122 million on sales of \$3.2 billion. In the same period of 1991, earnings from continuing operations, excluding a \$140 million tax gain, were \$77 million on sales of \$3.1 billion. With the tax gain included, earnings were \$217 million.

Continuing operations earned \$65 million in the second quarter of 1992, a 97% increase over \$33 million earned during the same period in 1991, excluding the previously mentioned \$140 million gain from a tax adjustment. With the tax gain included, 1991 second quarter earnings from continuing operations were \$173 million. Fully diluted earnings per share from continuing operations were \$1.48 in the 1992 second quarter, compared with 1991 results of \$0.77 without the tax gain, and \$4.06 with the 1991 tax gain. Sales in both the 1992 and 1991 second quarter were \$1.6 billion.

Backlog. Funded backlog for continuing operations at the end of the 1992 second quarter was \$13.6 billion while total backlog (funded and unfunded) for continuing operations was \$20.1 billion. Comparable amounts at the same time last year were \$12.7 billion and \$15.0 billion, respectively.

Cash and debt retirement. Financially the company closed the second quarter with approximately \$1.3 billion in cash and marketable securities. This easily covers the \$957 million purchase of company stock in July and provides ample funds in support of ongoing businesses as well. The first quarter retirement of \$350 million in debt benefited the second quarter by significantly lowering interest expenses, which, it is anticipated, will be further reduced by additional debt retirement later in the year.

Core competencies. Second quarter results demonstrate the continued success of General Dynamics' program to focus on core competencies, improve efficiency, and build financial strength. Three of the core businesses — tactical military aircraft, nuclear submarines, and armored vehicles — continued their solid performance of the first quarter, and the fourth — space launch operations — showed substantial improvement in operating results during this period.

Due to increased F-22 work, sales in the tactical military aircraft segment increased 7% from last year even with F-16 delivery delays as General Dynamics' Fort Worth Division worked with the U.S. Air Force to address quality issues. In fact, in a July 8 letter to Fort Worth Division General Manager Gordon England, a Pentagon official acknowledged that the division has expressed "renewed emphasis and commitment to quality as demonstrated by the immediate, short-term actions already taken and the long-term actions planned to resolve the quality system deficiencies."

Although tank sales fell 5% in the second quarter of 1992 compared with a year ago, profit margins improved from 8.3% to 9.5% due to more development work in 1992. A similar profit picture emerged from the submarines business: nuclear submarine sales fell by 5% but margins improved to 4.8% in 1992 from 4.4% in 1991. The company's space launch business cut its operating loss from \$25 million to \$7 million in 1992, and launches booked during the second quarter pushed up net sales by 30% — from \$94 million in 1991 to \$122 million in 1992.

Anders said he is encouraged by the growing appreciation government officials have exhibited in recent months regarding the need to protect critical elements of the defense industrial base through selected low-rate production. "This recognition," said Anders, "has been reflected in initiatives taken by both Congress and the armed services regarding the F-16 multirole fighter, the Seawolf submarine, and the M1A2 tank. Throughout our core businesses we are redoubling our efforts to provide high-quality, cost-effective weapons systems that can be produced profitably and efficiently at these lower rates of production."

Non-core Operations As reported in the June 1992 *GD World*, General Dynamics is selling its missiles business to Hughes Aircraft and expects to sell, as well, the other noncore businesses — commercial aircraft subcontracting, material resources, electronics, and sealift operations — as markets permit and adequate transactions can be negotiated.

Meanwhile, they are vital and important operating units whose future success and longevity depend on the strength each represents in its respective marketplace.

Second quarter earnings from non-core, "discontinued" operations are now segregated from core or "continuing operations" on the company's financial statements in part to highlight their financial performance and viability to investors, members of the financial community, potential buyers, or possible business partners.

Earnings from non-core operations in

the second quarter of 1992 were \$21 million. In the second quarter of 1991, they were \$38 million, including \$17 million from The Cessna Aircraft Company, which was sold in the first quarter of 1992. Total Net Earnings — the combination of earnings from both continuing and non-core operations — were \$86 million in the 1992 second quarter, versus \$211 million in the year-ago period. Fully diluted net earnings per share were \$1.96 in the second quarter of 1992 and \$4.95 in the year-ago period. ■

Dutch Auction Produces "Bullish" Results

Shares from approximately 21,000 of the 44,000 employees and former employees owning General Dynamics stock in the Savings and Stock Investment Plan (SSIP) were accepted in the company's buyback of approximately 31% of its outstanding shares of common stock. Their proceeds from the tender offer have been deposited in the SSIP's new "Special Distribution Fund" (SDF). Any future "Special Distribution" proceeds would also be placed there. The new fund can accumulate special distributions and income earned from their reinvestment but not any other contributions from the SSIP. On July 31 a letter was mailed to SSIP participants who have SDF balances explaining the procedures to follow and the restrictions that apply should they choose to transfer amounts credited to their account in the SDF to any other fund in the SSIP.

The "Dutch Auction" tender offer, which established a bidding range of \$65.38 to \$75 per share for up to 13 million shares, commenced on June 10, 1992, and closed at midnight New York City Time on July 8, 1992. General Dynamics' decision to invest in its own common stock is consistent with the company's philosophy of enhanced shareholder value and its plan to focus on four core, major-platform businesses. The number of General Dynamics' outstanding shares of common stock is now 29.1 million compared with 42.3 million at the end of the first quarter of 1992. This represents an equity value of \$2.3 billion at the current price of \$79 per share (as of August 5, 1992).

Under the terms of the tender offer, the company could increase the number of shares it accepts. General Dynamics has exercised that option and accepted for purchase the total tender of 13,248,432 shares of outstanding common stock at a price of \$72.25 per share. All shareholders who properly tendered their shares at or below \$72.25 per share received payment at this rate, making General Dynamics' total cash distribution \$957 million. There will be no proration and stockholders who bid above that figure will have their shares returned to them.

When the "Dutch Auction" was first announced on June 6, aerospace analyst Jack Modzelewski of PaineWebber Inc. said: "You have to remember that a year-and-a-half ago, Wall Street figured the whole company wasn't worth a billion dollars." On July 9 when the results of the tender offer were announced, Phil Friedman of Morgan Stanley said: "We believe these facts are bullish for the stock as there should be no near-term supply of stock for sale below the current market price." In fact, the stock price closed at \$72.875 on July 9, and as this issue of *GD World* went to press, the company's stock price of \$79 per share, as noted above, represents more than triple the value of the stock since January 1991 when Chairman and CEO William A. Anders took the reigns of the company and stock was valued at \$25.25 per share.

In commenting on the success of the self-tender offer, Anders said: "This significant reinvestment in General Dynamics is in keeping with our ongoing strategy to create a more efficient, more focused and financially strong company that will benefit customers, employees, and shareholders alike as our industry continues to adjust to the new defense environment."

Employees should call the SSIP Direct Information Access Line (DIAL) at 1-800-828-8100 (8186 for rotary dial phones) from 8 am to 8 pm Central Time, Monday through Friday, for questions and assistance. ■

GDWorld

FY 93 Defense Spending
Recognizes Industrial Base
Issues

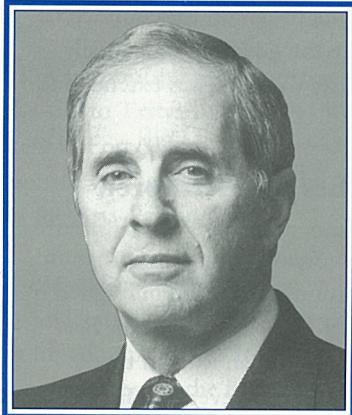
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GENERAL DYNAMICS — A STRONG COMPANY FOR A STRONG COUNTRY

VOLUME 22 NUMBER 4 OCTOBER 1992

GENERAL DYNAMICS STRATEGIC UPDATE - FALL 1992

Market Leadership and Program Efficiency: The Keys to High-Quality, Cost-Effective Weapons Systems In the Post-Cold War Era



William A. Anders
General Dynamics Chairman and CEO

On September 15, General Dynamics Chairman and CEO William A. Anders and President and Chief Operating Officer James R. Mellor joined with the recently appointed presidents of the four core business franchises in describing the company's progress over the last two years in more sharply focusing its business strategy and increasing shareholder value. Analyst Howard Rubel of C.J. Lawrence had this to say about General Dynamics' meeting with Wall Street analysts:

"At a meeting yesterday, General Dynamics provided analysts with a well-thought-out and superbly crafted presentation highlighting the basic actions that management has undertaken in the past 18 months to increase the value of its share price . . . General Dynamics has done a superior job of developing a focus and has found value where others have not."

Two days later on September 17, Anders summarized that presentation before the Morgan Stanley Aerospace Multi-Industry Conference. He reiterated the company's intent to achieve rationalization of the defense industrial base through the sale, purchase, or merger of programs. Because defense customers increasingly insist upon high-quality and low-cost production, achieving maximum "program efficiency" or "Critical Mass" is a top priority for the company. Program efficiency is also a major factor in preserving the work force and essential facilities and is, therefore, good for employees, the customer, and shareholders alike. While clearly of value, GD's "nameplate" on a business, Anders explained, cannot stand in the way of obtaining program efficiency or preserving critical skills for the customer.

The following is an excerpt from the Morgan Stanley presentation on September 17.

Over one year ago, I described the challenges facing General Dynamics' new management team when we took over in January of 1991. At that time, GD was out of step with reality by continuing to follow a growth strategy despite a rapidly declining market. Risk was high and rising, as was evidenced by erratic performance and too many surprises, most of them bad. Returns were low and falling. Cash was short, and the balance sheet was over-leveraged. As a result, our stock was considered the "lowest of the low" by our shareholders. GD was the most heavily discounted stock in an industry which was itself "out-of-favor" with investors.

Last year, I also outlined our response to this unacceptable situation. First and foremost, we focused our attention on shareholder value. We focused on restoring the company's financial strength. In light of the fundamental changes occurring in our market, we knew that GD's foundations had to go to bed-rock. And we focused on reducing costs. A continually improving cost structure is essential for keeping our backlog secure in the face of "Peace Dividend" pressures.

Our primary objective over the coming year is to strengthen the core businesses so that their performance is not only superior, but sustainable and predictable in the long term.

Equally important, a continually improving cost structure is providing a competitive advantage as we successfully pursue profitable new backlog both here and abroad.

I'm pleased to report that our management team has delivered solid performance in each of these three key areas. However, our task is far from finished. In my view, we have moved only from poor to average performance. While that has been a worthwhile effort, our goal is superior performance, and I am confident it is attainable. Our primary objective over the coming year is to strengthen the core businesses so that their performance is not only superior, but sustainable and predictable in the long term.

I believe a brief review of the principles that have driven the turnaround of General Dynamics to date will provide a solid basis for understanding our program to generate sustainable, superior value in the future. Each phase in our strategy has emerged quite logically from the one before it.

Continued on page 5

BUSINESS

Company Sharpens Competitive Focus Part III. Electric Boat Responds to Market Realities

This is the third article in a series describing the front line efforts of General Dynamics employees that produced solid gains for the company in 1991 and that are continuing in 1992. The Fort Worth and Land Systems divisions were featured in the June and August editions of GDWorld, respectively.

A year that began bleakly with the cancellation of the *Seawolf* program brightened noticeably for Electric Boat (EB) Division as Congress voted to retain the SSN-22 — the second *Seawolf* — and earmarked another \$540 million for future submarine procurement.

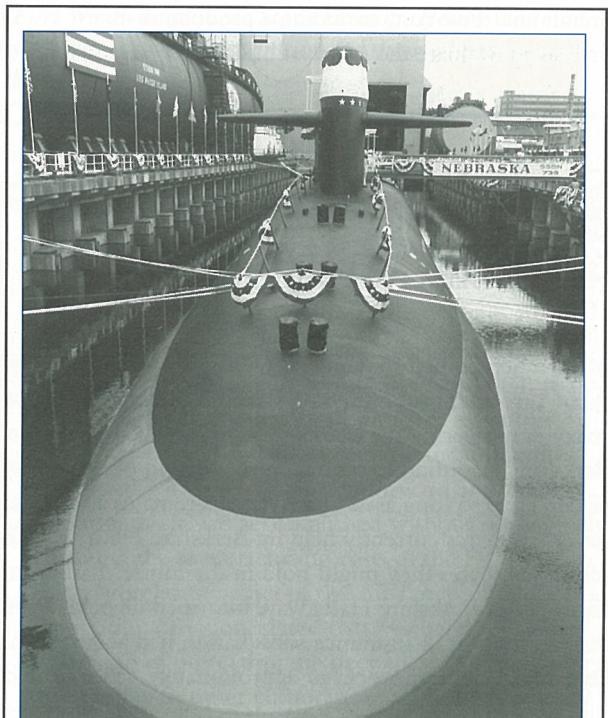
This outcome was the direct result of an extraordinary effort undertaken at both the division and corporate levels to preserve the nation's submarine industrial base after the Pentagon and President Bush called for rescission of FY 92 funding for construction of the second and third *Seawolfs*. General Dynamics' corporate and division management teams, supported

by union members, rank and file employees, vendors, and community representatives, coalesced with congressional supporters to press their case.

At one point during the campaign, nearly 1,000 Electric Boat employees traveled some 350 miles from the Groton, CT, shipyard to Washington, DC, for a *Seawolf* rally. Union leaders who organized the trip also delivered to the White House approximately 53,000 letters backing the submarine program, as well as petitions bearing 170,000 signatures.

Perhaps the most visible proponent of the effort to retain *Seawolf* was Roger E. Tetrault, EB's president, who testified before a series of House and Senate hearings on the need to retain the nation's ability to design and build nuclear submarines. Tetrault also argued that the Pentagon underestimated the cost of terminating the *Seawolf* program, asserting that it would

Continued on page 4



August 15 ceremonies marked the launch of the 14th Ohio-class (Trident) submarine Nebraska at the Groton shipyard.

SEPTEMBER 1992 SSIP RATE OF RETURN

SALARIED	1990	1991	1992	HOURLY	1990	1991	1992		1990	1991	1992
Government Bonds	8.9%	10.9%	9.0%	Government Bonds	9.0%	10.6%	8.8%	GD Stock Closing Price	23.625	46.375	85.126
Diversified Portfolio	-11.7%	31.6%	13.5%	Diversified Portfolio	-11.8%	31.5%	13.5%	Average Purchase Price	24.141	46.184	83.429
Fixed Income	10.1%	9.8%	10.2%	Fixed Income	10.1%	9.5%	10.0%	Stock Growth	-59.4%	96.3%	83.6%
* Special Distribution	N/A	N/A	5.1%	Special Distribution	N/A	N/A	3.9%	Dividends	1.7%	4.2%	2.8%
General Dynamics Stock	-57.6%	100.5%	86.4%	General Dynamics Stock	-57.6%	100.5%	86.4%				

* General Dynamics dividends are included in the Rate of Return of General Dynamics Stock. Proceeds from the "Dutch Auction" tender offer were deposited in the SSIP's new "Special Distribution Fund." The new fund can accumulate special distributions and income earned from their reinvestment. The fund cannot accept normal employee contributions to the SSIP. Rate of Return for Special Distribution is the annualized monthly year-to-date average.

WASHINGTON WATCH

FY 93 Defense Spending Recognizes Industrial Base Issues

The FY 93 Defense Authorization and the FY 93 Defense Appropriations Bills designate \$274 billion and \$253 billion, respectively, for Pentagon spending priorities and programs in Fiscal Year 1993. These results reflect months of strenuous deliberation by lawmakers and members of the defense community to find ways to reconcile declining defense spending with program funding so that U.S. national security interests and the nation's defense industrial base are guaranteed.

Of the 13 separate appropriations bills that comprise the federal budget, defense spending is one of the areas where authorizers (the Senate and House Armed Services committees) have demanded yearly authorization measures to accompany appropriations measures. The authorization bill establishes or "authorizes" programs and specifies general dollar amounts — sometimes spending ceilings — to fund them. The appropriations measure "appropriates" specific funds and establishes budget authority for designated agencies to carry on the programs named in the authorization. As mentioned above, the appropriations bill does not necessarily fund the total amount specified in the authorization bill.

Tactical Military Aircraft

In a major win for the USAF F-16 program, the defense appropriations conferees funded the full procurement of 24 F-16s requested in FY 93 and designated \$68.4 million in long-lead funds for 24 "Fighting Falcons" in FY 94. The Senate's earlier decision to eliminate the program in FY 93 was overturned by both authorization and appropriations conference committees.

Although \$68.4 million in long-lead funding has been appropriated, the funds will be put on hold, however, until the Department of Defense reports to Congress on Tactical Aircraft Modernization and Tactical Aircraft Roles and Missions in the post-Cold War environment. The Pentagon is reviewing acquisition policies for tactical aircraft and their cost, including a production-rate analysis to evaluate the effect of building fewer aircraft.

The report is also expected to include technical assessments by the Defense Science Board on using a single aircraft by the military services in similar missions. The Joint Chiefs of Staff will be reporting on the roles and missions of tactical aircraft and the Under Secretary of Defense/Acquisition on a revised acquisition plan for the AX aircraft that includes competitive prototyping.

Because of uncertainties and possible restructuring in the F-16 Close Air Support and the Mid-Life Update programs, lawmakers cut funds for these and other F-16 modification efforts in the FY 93 Defense Appropriations. Air Force Chief of Staff Gen. Merrill A. McPeak requested an in-depth review of all F-16 modification efforts, which is expected to be completed by November 3.

In another compromise decision, House and Senate appropriations conferees cut F-22 engineering and manufacturing development funding by \$200 million, potentially delaying the program. But on a positive note, the continued funding of the F-16 in FY 93 and FY 94 will help to bridge the production gap between the F-16 and the start up of F-22 rate production in the year 2000.

Washington office legislative staff will be closely monitoring the possible impact of these decisions on FY 94 funding.

Space Launch Systems

The Superconducting Supercollider (SSC) project survived a House decision in its FY 93 Appropriations measure to terminate the program. As expected, the Senate's strong opposition to the cancellation of the program resulted in House and Senate appropriations conferees approving \$517 million for the SSC. General Dynamics is one of three leading magnet contractors for the SSC. On the other hand, House-Senate conferees directed that \$10 million be used to terminate the new National Launch System (NLS) program. A positive position was taken by the Appropriations conferees to proceed with the Centaur (Upper stage) Processing Facility at the Cape Canaveral Air Force Station.

NASA spacecraft for exploration and communications are an important part of General Dynamics' Atlas and

Centaur business base for civil and commercial launch services, and, consequently, General Dynamics Washington Office staff also follow funding decisions in NASA oversight committees. Two items that are of significance to General Dynamics in NASA's FY 93 budget: first, the intermediate expendable launch vehicles procurement is proceeding in spite of a \$40.5 million cut in the agency's budget for the program, and, second, a risk-sharing provision for commercial launch companies where the government partially indemnifies for third-party damages was extended to the year 2000.

Nuclear Submarines and Armored Vehicles

The continuation of the *Seawolf* submarine program was resolved in a compromise rescission bill signed by President Bush on June 4 (See article on Electric Boat beginning on page 1) and was not an issue in the FY 93 budget deliberations. However, the FY 93 budget does include the addition of \$160.4 million for *Seawolf* research and development.

Funding for the Navy's Advanced Submarine Technology Program, sometimes called the *Centurion*, was ultimately decided in conference. In its budget deliberations, the House had reduced funding to \$97 million for advanced submarine technology while the Senate set a figure of \$132.8 million. House-Senate appropriations conferees agreed on \$134.8 million. The \$20.2 million reduction from the administration's request of \$155 million is not expected to have an impact on *Centurion* development.

The FY 93 National Defense Authorization and Appropriations acts endorse a 1000-vehicle tank upgrade program of M1s to M1A2 configuration. Momentum is already building to approve a U.S. Army conversion program during the FY 94 budget cycle that would fund a 210-vehicle program at \$900 million with first delivery in October 1994. Like F-16 modification programs and low-rate domestic production, lawmakers are increasingly viewing tank conversion programs as a key industrial base issue and a decisive factor in winning international sales. ■

Berkshire Hathaway Grants Proxy for GD Shares

On September 16, General Dynamics accepted a highly unusual and very supportive agreement submitted by Berkshire Hathaway Inc. that grants General Dynamics a proxy empowering the company to vote all General Dynamics shares owned by Berkshire according to the recommendation of a majority of General Dynamics' Board of Directors so long as William Anders remains as chief executive officer. The proxy covers all shares currently held by Berkshire Hathaway and its subsidiaries and any additional shares they might hold in the future. Earlier in the summer, Warren Buffett, chairman of Berkshire Hathaway, informed General Dynamics that his corporation through two of its insurance subsidiaries, had acquired 4.35 million shares of General Dynamics common stock, or approximately 15% of the company's outstanding shares.

In addition, the agreement stipulates that Berkshire Hathaway and its subsidiaries must obtain the prior consent of General Dynamics to knowingly dispose of any shares of General Dynamics voting securities to any person who has made a filing with the

Securities and Exchange Commission for ownership of 5% or more of General Dynamics stock or who would be required to do so as a result of the purchase from Berkshire. It also restricts sales to any party who seeks to change the control of General Dynamics, again, so long as Anders is chairman.

Commenting on the agreement, Chairman William A. Anders said, "Warren Buffett has told me that he is 'in for the long term' and that the purpose of his volunteering this agreement is to express his enthusiastic support of our management team and to allow us to continue to focus 100% on executing our strategic plan." Following the Berkshire Hathaway purchase of General Dynamics stock in July, analysts said that it was a positive sign for General Dynamics and could stimulate more investment in General Dynamics. Phil Friedman of Morgan Stanley & Co. viewed the transaction as "another sign of confidence" in GD's commitment to provide a strong return to investors. Wertheim Shroeder's Jerry Cantwell also regarded the buy as "a real vote of confidence" in management and its strategy. ■

Quote

"America's role as a military superpower was not preordained. It took the ingenuity of our workers, the creativity of our scientists, and the experience of our business leaders."

And now we must maintain our lead as the world's economic superpower and export superpower. It will require the same magical combination of ingenuity and creativity and experienced leadership, the same magical combination that you've created right here at General Dynamics."

President George Bush
September 2, 1992, Fort Worth, Texas

Fort Worth Wins F-16 Approval for Taiwan

In concert with a team effort by Fort Worth employees, union leaders, members of the Fort Worth community, and Texas' elected officials, General Dynamics' management and Washington office legislative staff saw their long-term efforts come to fruition on Wednesday, September 2. On that day President Bush traveled to the Fort Worth Division and announced his approval of a potential F-16 sale to Taiwan.

"I'm announcing this afternoon that I will authorize the sale to Taiwan of 150 F-16A/B aircraft made right here in Fort Worth," the President said. The sale, he asserted, will contribute to the goal of peace and stability in the Asia-Pacific region.

Bush's decision followed several weeks of careful consideration by the State Department and other agencies in his administration. It reflects recently changed circumstances in the balance of power between Taiwan and the People's Republic of China (PRC), due to the PRC's acquisition of Russian-built fighters.

The President first announced that he was reconsidering his position on the sale during a visit to Texas on July 30. Later, in mid-August, Bush told the Fort Worth *Star-Telegram* that the matter was still under review. At that time, he acknowledged that "Whatever I decide, somebody will try to make political hay . . . too bad it has to be over the lives of workers to whom I am very sympathetic."

General Dynamics Fort Worth employees and subcontractors, along with community leaders and others, wrote more than 6,000 letters to the President in July and August, urging him to approve the sale. On August 14, 100 members of Congress signed a letter to Bush requesting the approval. Representatives Joe Barton and Pete Geren and Senators Phil Gramm and Lloyd Bentsen, all of Texas, played important roles. Texas Governor Ann Richards, Fort Worth Mayor Kay Granger, and other community leaders also helped the cause.

The President's decision sets the stage for detailed discussions with the government of Taiwan. Senior executives from GD/FW arrived in Taipei shortly after the President's announcement to initiate those talks. Gordon England, president of GD's Aircraft Systems business unit, said, "We are hopeful that the government of Taiwan will accept this opportunity to add the F-16 to its inventory."

General Dynamics Chairman and CEO William A. Anders views the President's decision as an expression of support for the Defense Industrial Base because it will help sustain F-16 production at the Fort Worth Division at an efficient delivery rate into the late 1990s. The U.S. Air Force also recently announced plans to continue F-16 production at a rate of 24 aircraft a year through the end of the decade. Thousands of men and women in Texas and some 46 other states have a part in building the F-16.

The sale of 150 aircraft to Taiwan is very consistent with the "Critical Mass" approach that Anders has been following and would save an estimated 3,000 jobs at GD/FW in the second part of the 1990s when peak production would occur. Deliveries are projected to span from 1995 to the end of the decade. The impact on layoffs expected between now and the end of 1994 would be fairly small because the program will be in its early stages in that period.



Flanked by (l to r) Rep. Pete Geren, GD President Jim Mellor, GD Chairman Bill Anders, and Rep. Joe Barton, President Bush tells Fort Worth Division employees that he will authorize the sale of F-16s to Taiwan.

More than 3,000 F-16s have been produced worldwide since the first delivery to the USAF in 1978. An F-16 sale to Taiwan will make the Republic of China the 18th nation to order the aircraft. The Taiwan announcement follows recent decisions by Thailand and Singapore to purchase more F-16s, and on September 1, the defense minister of Greece announced that his country would also like to purchase 40 additional F-16s. Greece's expected order was already

in the division's business plan and won't affect employment projections.

The F-16A is in production at Fort Worth for Portugal, Thailand, and Pakistan. Taiwan could be offered an "advanced defensive interceptor" version of the F-16A, combining features of the F-16 Air Defense Fighter with the Mid-Life Update avionics. ■

General Dynamics Receives EPA Awards

The U.S. Environmental Protection Agency (EPA) recognized General Dynamics on September 29 with four 1992 Stratospheric Ozone Protection Awards at the EPA's International Chlorofluorocarbon (CFC) and Halon Alternatives Conference in Washington, DC.

The corporation as a whole was the recipient of one of the awards. Since the mid-1980s, General Dynamics has been working toward a goal of "zero discharge" of hazardous substances and was successful in reducing ozone-depleting substance emissions by 34% corporate-wide between 1989 and December 1991. Projects at the Space Systems and Fort Worth divisions played a major part in this success, and both divisions earned plaques for their accomplishments from the EPA.

Since 1990, Space Systems has cut its use of 1,1,1-trichloroethane by 75% and totally eliminated CFCs from precision cleaning. At Fort Worth, water-based degreasing processes are being implemented, and a patent-pending substance, FMS-2004 has been in use since September 21 to replace freon-based wipe solvents. Fort Worth Division employees — Steve Evanoff, Henry Weltman, and Tony Phillips — received awards for their efforts to preserve the Earth's ozone layer. Evanoff is Manager of Environmental Resources Management (ERM), and ERM team members Weltman and Phillips are the developers of FMS-2004.



(L to R) Fort Worth employees Steve Evanoff, Henry Weltman, and Tony Phillips receive recognition for their efforts to protect the environment.

Several U.S. Air Force and EPA officials attending the conference had high praise for General Dynamics' environmental efforts. John Hoffman, director of the EPA's Global Change Division, said, "These award winners are the best of the best . . . years ahead of regulatory mandates." Referring to FMS-2004, Maj. Gen. Charles Franklin, USAF program executive officer for tactical and airlift systems, including the F-16, said: "This is a giant step forward and, more importantly, it was accomplished without substantially changing the manufacturing costs of the F-16." Maj. Tom Morehouse, chief of the Air Force's Pollution Prevention Division, stated that "General Dynamics' leadership in protecting the ozone layer should serve as an example to other corporations within the military industrial complex." ■

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Electric Boat

continued from page 1

actually be more cost effective to proceed with the second and third submarines of the class.

Tetrault's argument for the preservation of Electric Boat as a critical element of the nation's defense industrial base was buttressed by Adm. Bruce DeMars, director, Naval Nuclear Propulsion, in a report released in March. "Electric Boat provides engineering, planning, and logistical support for all classes (of submarines). By virtue of vast experience and innovation, the yard is, without question, the world's premier resource for submarine design and construction technology."

Although the Senate approved a measure to retain both the second and third *Seawolf* submarines, the House and later a Conference Committee voted to fund only the SSN-22 but set aside another \$540 million, which might, at the discretion of DoD, be applied either toward building a third *Seawolf*, continuing the SSN-688-class attack submarine, or any other approach the U.S. Navy chooses to preserve the submarine industrial base.

The uncertainty surrounding the *Seawolf* program wasn't limited to the political arena. In March, a federal appeals court upheld the U.S. Navy's award of the SSN-22 to Electric Boat, whose successful bid for the contract in 1991 was challenged by competitor Newport News (VA) Shipbuilding and Drydock Co. And in June, the Navy responded to congressional action and lifted its stop-work order for the second *Seawolf*, enabling the division to proceed with design and construction work that had been frozen since February.

In the meantime, progress on the SSN-21, the lead *Seawolf*, accelerated as new welding procedures were developed and introduced after the discovery last year of weld cracks in HY-100 steel being used to build the submarine. Construction of the SSN-21 is expected to be completed in 1996 and the SSN-22 in 1997.

Business Improvement Program Established

Electric Boat continued its solid performance in the first nine months of 1992. Although nuclear submarine sales fell by 3 1/2%, profit margins improved to 5.4% in 1992 from 4.7% in 1991. The division's heightened emphasis on business results, improved performance, and cost-containment efforts resulted in earnings on 688-Class nuclear submarine production for the first time since 1987.

A leaner, more focused management approach and improvements in shipyard productivity played a part in two early deliveries to the Navy in 1991 — the 12th Ohio-class Trident submarine *Kentucky* (SSBN-737) and the Los Angeles-class *Alexandria* (SSN-757). Progress has also been maintained on Electric Boat's backlog with an Ohio-class submarine, the U.S.S. *Maryland* (SSBN-738), and a Los Angeles-class submarine, the U.S.S. *Annapolis* (SSN-760), delivered to the Navy this year. The Ohio-class U.S.S. *Nebraska* (SSBN-739) and the Los Angeles-class U.S.S. *Columbus* (SSN-762) were launched in August.

However, Electric Boat will be challenged into the foreseeable future to improve operating efficiencies

A New Approach to Nuclear Submarine Design

Long-term, continuing business will go to those who can profitably produce high-quality, cost-effective weapons systems at sustained low rates. In an effort to achieve program efficiency, Electric Boat has embarked on a program to cut costs and boost productivity in all phases of design and production. It is called the Production Automated Design Process (PADP), and its key component is not just computer hardware and software but a change in organizational thinking through the introduction of integrated product development teams.

PADP represents a significant evolution in the approach the division has taken to design nuclear submarines. "With PADP, we intend to demonstrate Electric Boat's world class design capabilities," says Brad Burgess, PADP project manager. "Our objectives are to reduce the cost of submarine design all the way through

construction, develop a process that is fully integrated with the division's existing automated construction and Manufacturing Resource Planning (MRP II) processes, and ensure that this integrated procedure evolves as requirements change."

The new "design/build teams" include representatives from various functions — design, procurement, quality, planning and operations. "In a way, we're going back to the way things were done when Electric Boat was a smaller organization when people from the shipyard would come onto the design floor to resolve an issue," Burgess says. "It is essential that these teams break down the barriers that arise between departments and go back to a more informal kind of communication between functions. We want to take decision making down to as low a level as practical." ■

and maintain profit margins as its backlog of five Ohio-class (Trident) submarines is depleted in 1997 and five Los Angeles-class (SSN-688) in 1995. The division's newly implemented Business Improvement Opportunity (BIO) program is focused on adapting to low-rate production by reducing the size of its business, cutting costs, and streamlining the organization while, at the same time, retaining the core capabilities required to design and build submarines.

So far, more than 80 areas of opportunity for increased efficiency have been targeted across all functions of the division and assigned to division vice presidents who have formed cross-functional teams to develop recommendations for action. One of the initial areas addressed is an improved reporting system to give managers more accurate and timely information on labor, material, and overhead costs so that they can use this data to better control these costs. Another effort is underway to reduce inventory and associated storage space throughout the division. And in a third area, work rule changes allowing special work shifts and alternative work weeks have resulted in improved trade productivity.

Looking even farther into the decade, the division has organized a program management office for the New

Attack Submarine (NAS), the successor to the *Seawolf* class. In 1991 the Navy selected Electric Boat to design the propulsion plant for the NAS. The division's goal is to win the competition to design the rest of the proposed submarine, called the *Centurion*, and, ultimately, the contract to build it.

In conjunction with the NAS office, engineering and design projects in the research and engineering organization are underway in anticipation of the new submarine, which is expected to be authorized in 1998. In the FY 93 defense budget deliberations, the House and Senate conferees settled on \$134.8 million for advanced submarine technology, essentially moving the program forward another notch.

Meanwhile, Electric Boat is strengthening its performance by prudent management of its remaining backlog and by consistently meeting or exceeding customer expectations for the SSN-21 and SSN-22 contracts. Winning approval of the SSN-23 and the aggressive pursuit of work associated with the NAS are high priorities for Electric Boat as it maximizes its ability to weather the decline in defense spending and makes the difficult decisions that will establish the division as the sole supplier of submarines to the U.S. Navy. ■



A crowd of more than 11,000 turned out for the August launch of SSN-762 Columbus. The Los Angeles-class submarine shown sliding into the Thames River at Electric Boat's Groton, CT, shipyard is the 30th vessel in its class.

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Land Systems Workers Earn High Praise

Product quality is in the forefront of worker concern across the division and is one reason why General Dynamics Land Systems Division (GDLS) has earned an international reputation as the world's foremost supplier of main battle tanks. In an October 27 address to the Aerospace Industries Association, General Dynamics Chairman and Chief Executive Officer William A. Anders cited GDLS as being "in the forefront of developing program efficiency for low-rate production." Achieving program efficiency, or Critical Mass, Anders said, is "the key to high-quality, affordable weapons systems for the customer, predictable value for the shareholder, and secure, meaningful work for the employee."

GDLS workers at the Scranton Plant, a key operation in the manufacture of the Abrams main battle tank, had an opportunity to demonstrate their skills and dedication to quality when Anders and members of his staff visited the plant in August. The 500 employees at the Scranton, PA, facility furnish major components and spare parts for the Korean tank program, tank suspension system parts, commander weapons stations, gunner primary sight, turret race ring assembly, and many smaller machined components.

Scranton employees have achieved a Class A certification as a user of Manufacturing Resource Planning and have qualified for the government's Contractor Performance Certification Program. Under the latter program, "the U.S. Government will accept tank components if the Scranton employees say they are quality parts," says George Stathopoulos, plant manager, "which is quite a testimonial to the plant's quality reputation."



Chairman Bill Anders (r) stopped to discuss the production of torsion bars with Ed Karluk (l), a precision grinder at the Scranton facility.

Anders and his entourage were briefed on the plant's role in the manufacture of the Abrams tank. After being introduced to plant management and meeting with local union officials, Charles Hall, vice president of manufacturing, took the group on a tour of the plant. Chairman Anders talked one-on-one with employees at their work stations and came away "impressed with the Scranton Facility." Anders said, "It's truly a team effort by a real team of pros." He added that he was also impressed by the size of the facility, the size of the parts being produced, and the available production potential.

"Scranton employees have a lot of pride in their work," Stathopoulos said, "and we were delighted with the opportunity to show off our capabilities to the chairman."

Quayle Visits Lima

Workers at another GDLS facility, the Lima Army Tank Plant, were praised by Vice President Dan Quayle. Quayle made the plant his first stop on an October 22 campaign bus tour through southwestern and central

Ohio. He addressed workers and repeated the commitment of the Bush Administration to upgrade the M1 Abrams and to preserve the tank's industrial base throughout the United States.

At a press conference following a tour of the Lima facility, Quayle praised GDLS workers who build "the finest tank in the world . . . and the reason that this tank is the best in the world is the workers . . . they're the ones that give it quality . . . the workers are the ones that create the technological advantages that we have."

Quayle's visit was the second to a Land System's facility during the presidential campaign. In August he told employees in Warren, MI, that the administration was releasing \$300 million for the critical upgrade program. ■

Strategic Update

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In operations, our first major initiative was to require business-like behavior from management based on a realistic evaluation of the marketplace. We realized early on that our markets were not only growing smaller, but that this change was structural and long-term. There would not be a cyclical upturn in the foreseeable future. Profitable new backlog would only be available to high-quality, cost-effective producers.

Substantial write-offs were taken to reflect this new reality, greatly reducing risk in the backlog. Excess resources were trimmed out and investment hurdles were raised. Similarly, our bids for new business were required to generate solid profitability from the start.

Over the past year, it has become clear that long-term, continuing business will go to those who can profitably produce high-quality, cost-effective weapons systems at sustained low rates. Program efficiency is therefore a major priority as we continue to reshape our operations.

We must provide our customer low overhead and affordable costs in all phases of weapons system design and production.

We must provide our customer low overhead and affordable costs in all phases of weapons system design and production. Accordingly, we are concentrating on our skills as integrators of major weapons platforms, and outsourcing sub-system and component work wherever this enhances the cost structure and quality of the final product. We are re-configuring entire production lines to accommodate profitable, sustained,

low-rate deliveries. We are consolidating facilities and streamlining our inventory systems. Entire layers of management are being eliminated. Accordingly, decision making is being decentralized, providing

front-line management increased accountability and authority. In short we are successfully placing an intense focus on program efficiency. In this regard, our productivity has increased 35% since our new management team took over. In addition, total overhead costs have been lowered and our net operating assets have been reduced from 37% of sales to 19%. And, we have room for further improvements.

Exactly the same principles which have been driving our approach to operations are behind the restructuring program we've put in place at General Dynamics — a

commitment to shareholder value, a realistic view of our changing marketplace, and an aggressive, business-like response to those changes.

When the new management team "stepped up to the plate" in early 1991, we were open to a wide range of possible responses, including diversification out of the shrinking defense industry. However, last year I reported that we had concluded that a diversification strategy represented unacceptably high risk for General Dynamics. Study after study had shown that companies which are dominated by defense operations have miserable track records when they attempt to diversify — including General Dynamics itself, by the way. On the other hand, month by month our major defense platform franchises were demonstrating their strength and resilience. Profitable new business was being won. Margins were going up. Cash flows were strong. Frankly, it didn't take an MBA to see where our strengths were and that our focus should remain on our core defense competencies.

At that point, it only made sense to begin the process of moving non-defense operations out of the company.

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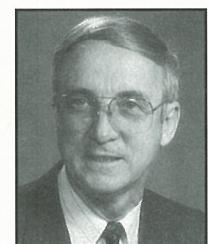
General Dynamics Core Business Presidents



Roger E. Tetrault
Corporate Vice President
and President
Electric Boat Division



Michael W. Wynne
Corporate Vice President
and President
Space Systems



Gordon R. England
Corporate Executive
Vice President
and President
Aircraft Systems



George P. Psihas
Corporate Vice President
and President
Land Systems

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They were overshadowed by defense and, therefore, undervalued by the financial markets, in our view. And, they were diversions for management at a time when our attention was best placed on defense.

As we reviewed our defense businesses for their potential as core competencies, the changing shape of our marketplace once again drove our logic. Last September, I outlined what we considered to be a primary challenge facing the industry and some of the basic premises we have used in response.

In my view, a major problem facing the health of the defense industrial base is overcapacity. Declining weapons system procurement has reduced demand in the defense industry by more than 50% since 1985. However, our industry's supply — its capacity to produce weapons systems — has actually increased steadily through this entire period, resulting in increasing inefficiencies in the industry. A great deal of this overcapacity — and some of the current players — must exit the industry if our nation is to continue to have a strong, efficient, and viable defense industrial base. The same can be said for the public side as well. Government shipyards, depots, test facilities, etc., are also sized for "Cold War" demand and beg for national policy decisions regarding their future roles.

I call this much-needed weeding and reduction process "Rationalization." On the private side, I firmly believe that only those businesses which can assume leadership in their areas of expertise will emerge from this industry consolidation strong and viable. That means they must be, or become, #1 — sometimes #2 — in their businesses. But, even market leadership will not be enough unless they also obtain what I call "Critical Mass." Critical Mass simply means that the resulting business must have an efficient balance of supply (its plant, skills, and technology) with demand (ongoing production of weapons systems). Given the marketplace, most of the players in our industry will have to buy, sell, or merge businesses to obtain Critical Mass.

We have also concluded that only those businesses whose products are at the very center of our armed services' military missions are likely to have sustainable production volumes through the end of this decade. Selective, sustained, low-rate production in critical sectors of the defense industrial base is a clear and growing focus for the Congress, our armed services, and both of the current candidates for the White House. This procurement strategy preserves vital capabilities for national security. In many cases, it also provides a firm foundation for foreign sales. These marketplace-driven parameters (business leadership, potential for Critical Mass, and a militarily essential franchise) formed the basis for our selection of the core.

At General Dynamics, we had five potential core businesses. Clearly, additional program production volumes were needed to keep our Missiles operations in the game. In addition, this had become a highly price-competitive, "commodity" business, thus eroding its franchise. We looked for an acquisition or merger

to strengthen both the franchise and its Critical Mass but found only buyers among our peers. In the end, a sale to Hughes created the strongest business and, therefore, generated the most value for all concerned. This is the first real rationalization in our industry, and it has been strongly supported by DoD.

At our annual meeting in May, we announced that we would focus on strengthening four core businesses — armored vehicles, nuclear submarines, space launch systems, and tactical military aircraft. Each represents a major platform franchise of high value to our national security. In fact, based on anticipated 1992 revenues, each would be a "Fortune 500" company on its own. The strength of our core operations is not just in their future potential. Their aggregate current return on assets is 19%, and is clearly superior to the 11% ROA currently generated by aggregate non-core operations.

Clearly, our decision to focus on franchises with growing efficiencies and strong backlog — and to turn non-core operations into cash — is totally consistent with our focus on shareholder value, financial strength and profitability.

As you may know, I have objected to the use of the term "liquidate" to describe our program. I use the term "monetize" instead. While these may be viewed as equivalent terms on Wall Street, to our customer, the employee and the community, "liquidation" means termination of a business. Every General Dynamics transaction to date

has "monetized" a business, leaving it at least as strong as before, and potentially stronger. Not one business has been terminated! Negotiations are underway for other non-core transactions, and we are moving forward to complete this program as soon as is practicable. Given the nature of these kinds of transactions, and our dedication to obtaining fair value for any asset, it is obviously impossible to predict the exact outcome of this effort. But, we are ahead of our plan, and I'm quite pleased with the results so far.

With this brief review of our strategic priorities and the resulting actions as a back-drop, I believe the next phase of our program should be absolutely clear. We are strengthening our core franchises to emerge from the rationalization of the industry as strong, long-term players.

Frankly, I'm a bit frustrated that the industry as a whole seems to be lagging General Dynamics regarding rationalization. Many of the players in this industry seem to be willing to risk increasing inefficiencies and eventual termination of their franchises by the marketplace simply to keep their "nameplates" over the door. Such inaction may provide a false and temporary sense of security for employees, management, customers and shareholders. However, the ultimate price could well be the real liquidation — i.e., the termination — of worthwhile segments of this nation's defense industrial base due to increasing inefficiencies that make their products unaffordable for our military customers.

At General Dynamics, we do not intend to stand by and watch any business wither into an anemic dwarf. We intend to explore every opportunity for creating program efficiency and Critical Mass in the core, and we have put in place some simple, straightforward rules to follow as we move forward. Our actions must enhance shareholder value, and be designed to increase Critical Mass and maximize program efficiency. For the foreseeable future, we are convinced the name of the game is profitable, high-quality, low-cost, low-rate production. Program efficiency is therefore the key to long-term value.

Further, we will not buy at a premium. Given our "business-like" approach and dedication to program efficiency, this should not be a surprise. Finally, if the sale of a business or program is the only option that will provide that franchise Critical Mass and program efficiency, it will be considered. But, we will not sell at a discount. With excellent franchises, strong cash flows, high liquidity, and low debt, we can exert considerable control over our own destiny, and intend to do so. The priorities underpinning our efforts to strengthen the core franchises should not come as any surprise, either. Once again, at the very top is program efficiency or Critical Mass. If you only remember one phrase regarding General Dynamics today, it should be program efficiency. On a scale of 1 to 10, this has to be a 10.

Utilizing our up-to-date facilities and our skilled work force is important as well, especially where they represent critical elements in the defense industrial base. But, unless program efficiency — our first priority — is met as well, our facilities and work force cannot be sustained in the long run. Therefore, this has to rank somewhat lower on the scale.

Even lower on the priority list is the GD "nameplate." It has value for

sure, but we cannot let it stand in the way of obtaining program efficiency or preserving critical plant and skills for the customer. Those of our peers who clutch on to their nameplates at the expense of Critical Mass are, in my opinion, destined for increasingly hard times.

GD plans to stay out in front of this market-driven imperative. Our objective is to create low-cost, strong and stable franchises with sufficient Critical Mass for the long-haul. That's the key to high-quality, affordable weapons systems for the customer, predictable value for the shareholder, and secure, meaningful work for the employee.

As you may know, we recently assigned the title of President to the heads of each of the core businesses. This is the latest step in an ongoing program to increasingly empower front-line management with the authority and accountability they need to assure they are #1 or #2 and achieve Critical Mass. They each

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"As you may know, we recently assigned the title of President to the heads of each of the core businesses. This is the latest step in an ongoing program to increasingly empower front-line management with the authority and accountability they need to assure they are #1 or #2 and achieve Critical Mass. They each have been charged with crafting a workable strategy to meet both our performance and rationalization objectives."

William A. Anders, October 17, 1992

Strategic Update

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have been charged with crafting a workable strategy to meet both our performance and our rationalization objectives.

Now that I've given you both the theory of the case and our plans for implementation, I'd like to briefly review each core business, taking a look at its backlog, performance, and the strength of its franchise going forward.

In my view, Armored Vehicles is clearly a business that is undervalued by many financial observers. They appear to overweight the fact that currently funded backlog expires in 1995. However, a more complete picture should include total backlog and opportunities as well.

Total backlog adds in domestic and international contracts which are authorized, but not yet funded, and similar new business we view as very high potential. Opportunities represent potential business we are aggressively pursuing around the world and in which we believe we have a competitive edge. When these sources of business are taken into account, the Armored Vehicles business is a solid one for the foreseeable future.

Domestically, we are assuming that the Army's program to upgrade older M1 series tanks to M1A2 status will go forward, providing our Armored Vehicles business with sustained low-rate production through this decade. The

Army's upgrade effort is a big help in maintaining our strong position in international markets. It certainly provides strong support for the Saudi's decision to stay with the "state-of-the-art" M1A2 as their tank of choice, and we believe this provides us a competitive edge in the current Kuwaiti competition.

In addition, this business is in the forefront of developing program efficiency for low-rate production. Given its efficiency and strong foreign and domestic potential, Armored Vehicles may well be on the verge of developing Critical Mass on its own, with cash generation potential similar to a utility.

I believe our Nuclear Submarines business is also undervalued by the financial markets. It may have been appropriately discounted earlier this year when government support for the submarine industrial base appeared to have all but evaporated. However, in the intervening months government at all levels has increasingly recognized the economic and national security risks of letting that industrial base disappear.

We believe the funded and total backlog we are assuming for this business is reasonable and

conservative. In addition to firm contracts for submarine production, total backlog assumes annual engineering and overhaul work for existing submarines, and a modest amount of design and study work for a next-generation submarine prior to 1997.

I don't think this franchise's total value is reflected in the market, even given a discount to reflect the fact that the total backlog we currently anticipate may not adequately preserve the submarine industrial base. Obviously, adding production volume, either from other private or public yards, would enhance this business' program efficiency and viability.

I would have to assume that the financial markets are currently assigning little present value to Space Launch Systems. For the moment, I would say that is probably a realistic assessment, but only while the cause of our recent launch failure remains uncertain and unresolved.

The support of our customers is still very strong, and many of them are working closely with us to resolve this problem. The franchise occupies a critical niche in the industry, and is therefore highly valued.

There is considerable funded and total backlog in place. The business we are assuming here reflects the fact that commercial payloads are increasingly moving into the Atlas lift range and assumes a conservative win rate in that market. The government portion of the projection is based on the fact that we represent the only true medium-weight launch service in the United States.

Obviously, with the recent launch failure, the biggest challenge facing us is demonstrating reliability for our customers. Identifying the cause of the most recent failure is Space Systems' number one priority. While we can take some comfort in the fact that occasional unsuccessful launches are the nature of this business and that competitors have successfully weathered similar problems, we cannot simply be as good as the other guy. Our objective is high reliability and market leadership. I believe the fundamentals demonstrate this is a realistic objective. Financially, the vast bulk of our investment in the launch program is behind us, and so non-recurring costs should be low.

This business has made enormous improvements in its financial performance over the past year, and, provided we demonstrate credible reliability, there is every reason to believe we will continue that momentum.

Like our tank business, I believe that the value of our Tactical Military Aircraft business is significantly underestimated in

the market. Specifically, the F-16 franchise is not fully appreciated. International sales of F-16s and related aircraft are an increasingly important part of the total backlog we expect in this business.

In addition, the opportunities we expect to come into this backlog reflect what we believe is the strong probability that the USAF will continue low-rate F-16 production through the end of the decade. The F-16 platform is extremely flexible, upgradable, and is very cost effective. As a result, we anticipate continued overseas

sales of F-16s as well, such as the recent good news regarding high probability sales to Taiwan and Greece.

We are dedicated to preserving that cost advantage for the F-16 despite lower rates of production. While we are only part-way into a program to reduce costs and assure high quality, results to date have exceeded expectations.

I'm sure that many of you are aware of the F-16 delivery and quality issues we have been resolving in concert with the USAF. Financially, these efforts to increase low-rate production efficiency are expected to generate substantial amounts of cash as we appropriately resize our operations. This not only reduces overhead burdens for the customer, but substantially bolsters the company's financial resources and its underlying value to shareholders.

In addition to continuing domestic and overseas demand for new F-16s, we anticipate a steady stream of business associated with spare parts, upgrades, and services for the more than 3,000 F-16s in the installed base. And, this backlog does not anticipate any shifting of public sector "depot" work to the private sector, or additional F-22 business, both of which are possible. While I believe the F-22 is the strongest next-generation aircraft currently in development, it is simply too soon to value production revenues. However, it does have strong long-range potential, and more importantly keeps us firmly in the development loop for advanced aircraft technology.

Our Tactical Military Aircraft business is expected to continue to generate strong value, both in terms of positive cash flow and long term, efficient, profitable production. Does it have Critical Mass?

It certainly is positioned to generate solid returns through the end of this decade. But, this backlog will not generate maximum efficiency from our facilities. If the franchise were effectively combined

with additional programs, the customer, the investor and the employee would realize even further benefits.

Looking into the core as a whole, we estimate that the combined total backlog from these four strong core businesses will keep total core revenues relatively flat for the foreseeable future.

As you have seen, our focus is on business strength and performance, not corporate size. That is the basis for near- and long-term value for all concerned. Our strategy has generated substantial amounts of cash and will continue to do so. Our priorities for the use of that cash were outlined at this conference last year, and they remain unchanged.

First, we will maintain high liquidity and a strong balance sheet. That was the pledge. We delivered. We will continue to deliver.

... We estimate that the combined total backlog from these four strong core businesses will keep total core revenues relatively flat for the foreseeable future.

The F-16 platform is extremely flexible, upgradable, and is very cost effective.

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F-16 Upgrades Approved

The Bush Administration approved a \$1.85 billion plan on October 28 for General Dynamics to upgrade 399 F-16A/B aircraft owned by the Netherlands, Belgium, Denmark, and Norway. The aircraft, which were purchased by these European nations in the early 1980s, will be upgraded with new cockpits, advanced avionics and radar, a new digital terrain system, enhanced night flying, and microwave landing systems,

among other improvements. The modernization work will be distributed between the United States and Europe with the first upgrade kits scheduled for delivery in October 1996. The overhaul is expected to be completed by early 1999.

The upgrade plan had been resisted by the U.S. Air Force until Defense Secretary Dick Cheney removed the hurdle. The administration said the sales "will

contribute to the foreign policy and national security objectives" of the United States by improving the allies' military capabilities and the standardization of military aircraft among the NATO members. ■

NEWS DIGEST

Third Quarter Results

General Dynamics reported 1992 third quarter earnings from continuing operations of \$62 million on sales of \$1.7 billion, an increase of 55% from 1991 third quarter earnings from continuing operations of \$40 million on sales of \$1.4 billion. Total net earnings, the combination of earnings from both continuing and non-core businesses, were \$120 million in the 1992 third quarter, versus \$71 million in the year-ago period.

Funded backlog from continuing operations at the end of the 1992 third quarter was \$12.9 billion, while total backlog (funded and unfunded) from continuing operations was \$19.1 billion. Comparable amounts at the same time last year were \$13.2 billion and \$19.5 billion, respectively. ■

Hughes Sale Complete

On August 24 Hughes Aircraft, a subsidiary of General Motors (GM) Corporation, announced completion of the purchase of General Dynamics' missiles operations through the delivery of 21.5 million shares of GM Class H Common Stock to GD. GM made a public offering of 28 million shares, including the 21.5 million owned by GD, on October 16. At \$18 per share, this will provide GD with \$372 million after expenses. Because GD was assured of getting at least \$450 million for the missiles unit, Hughes is required to make up the \$78 million difference.

The missiles units acquired from General Dynamics — the former Air Defense Systems Division and the unmanned strike systems portion of the Convair Division — will be consolidated with Hughes' missile operations to form a single operation: Hughes Missile Systems Company. On September 9, Hughes announced that missile manufacturing activities from several locations, including former General Dynamics' facilities in San Diego, Pomona, and

Rancho Cucamonga, CA, and Camden, AR, will be consolidated into its plant in Tucson, AZ.

In its August 28 edition, *Aerospace Financial News* quotes a Wall Street aerospace analyst who said: "The major impact of the Hughes-General Dynamics deal is that it looks as if Raytheon's dominance in the missile industry could be challenged for years to come. In expanding Hughes' portfolio, there doesn't appear to be a down side." Raytheon's missile sales in 1991 totaled \$2.6 billion; added together, General Dynamics and Hughes Aircraft missile sales — \$1.4 billion and \$1.3 billion, respectively — total \$2.7 billion. This would put McDonnell Douglas in a distant third place in the missiles business based on 1991 missiles sales of \$1 billion, according to *Aerospace Financial News*.

GD Chairman and CEO William A. Anders told analysts in September (*See "Strategic Update" on page 1*) that the major problem facing the health of the Defense Industrial Base is overcapacity and that to assure its survival and better serve the customer, some of the current players must exit the industry. "Every General Dynamics' transaction to date," Anders said, "has 'monetized' a business leaving it at least as strong as before and potentially stronger. Not one business has been terminated." The sale to Hughes, which created the strongest business and greatest value for all concerned and was supported by DoD, was the first step in the rationalization of the industry. ■

Safety Award

Freeman United Coal Mining Company's Crown III Mine was awarded the 1991 Small Underground Mine Award by the Illinois Department of Mines and Minerals. Awards were granted to those coal mines with the best overall injury frequency rate for 1991 in separate categories. A subsidiary of General Dynamics' Material Service Resources Company, Freeman's Crown III Mine had a 4.93 overall injury

frequency rate. The Crown III Mine has a work force of 109 and is located near Farmersville, IL.

Freeman's Industry Mine, which employs 90 people and is located near Macomb, IL, was presented the Small Surface Mine Award with a 5.44 overall frequency rate. ■

Matching Gifts Program Amended

Effective January 1, 1993, General Dynamics' Matching Gifts Program will limit participation to current employees only. Contribution levels — \$50 minimum per gift and a yearly maximum per person of \$5,000 — will remain the same. However, there will be some changes in the matching gift categories. Arts and Culture will be dropped but Colleges & Universities will be expanded to include Secondary Schools. Hospices will be added to the Hospitals category. Educational Funds, Health Organizations, and Youth Organizations will stay the same.

For more information, call GD's Matching Gifts Administrator Christine Gatewood at 703/876-3188. Application forms are available through division community relations offices: Electric Boat, 203/433-8024; Fort Worth, 817/777-8295; Land Systems, 313/825-7930; and Space Systems, 619/573-8080. ■

Electronics Division Sold

The Carlyle Group announced on October 5 that it will purchase the San Diego-based Electronics Division of General Dynamics. The division employs 2,300 and specializes in applying digital technology to design, develop, manufacture, and support quality defense electronics for tactical and strategic forces. The deal is expected to be concluded by November 30. Dr. Terry A. Straeter, formerly head of the Electronics Division, will be the chief executive officer of GDE Systems.

Senior management will have an ownership stake and continue to operate the new company, named GDE Systems, from its base in San Diego.

Carlyle is a private merchant banking firm based in Washington, DC. It has led numerous partnerships in purchasing major corporations, including BDM International, a defense-oriented consulting firm previously part of Ford Aerospace, and, most recently, the LTV Aircraft Division now operating as Vought Aircraft Corporation. William E. Conway, Jr., a managing director of Carlyle, said of the purchase, "We believe that General Dynamics' Electronics Division is an extremely well-managed organization that is well-positioned in the defense market with high-growth potential in the commercial sector." ■

USO Pledges Top \$2 Million

With most of the pledges tallied as *GD World* went to press, corporate and employee contributions to the USO's 1992 fund drive — *The Campaign for Freedom's Finest* — will top the \$2 million mark. GD had pledged \$2 million to the campaign. Pledges from employees came to approximately \$1.2 million. In addition, the company matched \$750,000 of the employee contribution and made a corporate donation of \$500,000.

General Dynamics has been a long-time supporter of the USO. GD Chairman and CEO William A. Anders is the USO's national campaign chairman for the 1992 fund drive. ■

Hurricane Relief

General Dynamics donated \$50,000 to the American Red Cross Disaster Relief Fund. The philanthropic effort is intended to alleviate the suffering of those most affected by the devastating destruction of Hurricane Andrew. ■

Strategic Update

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□ Second, we are committed to retaining ample capacity to invest in our businesses as appropriate. With low debt, a \$1 billion line of unused credit and strong free cash flow, we more than cover this priority, and will continue to do so.

□ Third, given our decision to forego diversification, we believe excess cash should be returned to shareholders. We believe shareholders should make their own diversification decisions. We have clearly delivered on that commitment.

To summarize, we've made substantial progress at General Dynamics since January of 1991. We committed to a business-like, value-oriented culture. It's in place. We committed to building financial strength. We delivered. We committed to focus on further strengthening our core franchises. They are defined, and each has a strong backlog. Further, in each of our core businesses, the management is in place, empowered and incentivized to build both backlog and program efficiency.

Given our track record, I think you can safely assume that we will act to meet the principal objective I stated as

I began my presentation — to generate superior, predictable performance for the long term. As you must know by now, I believe that meeting this objective is part and parcel of generating maximum value for shareholders, providing meaningful long-term opportunities for employees, and profitably and efficiently producing high-quality, cost-effective products in support of our national security customers. ■

... In each of our core businesses, the management is in place, empowered and incentivized to build both backlog and program efficiency.

GENERAL DYNAMICS

NEWS

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FOR IMMEDIATE RELEASE
July 20, 1992

Julie C. Andrews (GD)
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S T A T E M E N T

The International Association of Machinists (IAM), Hughes Aircraft, and General Dynamics have reached agreement on certain employee seniority rights related to the sale of GD's missile operations to Hughes.

The agreement allows union employees the benefit of all seniority rights they had under the collective bargaining agreement as if the sale had not taken place, while enabling the companies to maintain production and delivery schedules without disruption.

The agreement extends job "bumping" rights for employees of GD who transition to Hughes as a result of the sale and are subsequently laid off. Such employees may exercise seniority rights back to GD for jobs they are eligible for under the terms of the collective bargaining agreement.

The agreement will be in effect until expiration of the present collective bargaining agreement in August 1993.

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